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Designed to serve as a reference and source of ideas on the use of slides in combination with audiocassettes for presentation design, this book of readings from Audiovisual Instruction magazine includes three papers providing basic tips on putting together a presentation, five articles describing techniques for improving the visual images, five explaining how to make title slides, two on slide-tape programming equipment, and five providing examples of use in operational situations. The concluding section includes a paper on how to publish a slide-tape presentation and another on rehearsing a slide presentation without a projector. (CHC)

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PRODUCING SLIDE AND TAPE PRESENTATIONS

Readings from "Audiovisual Instruction"—4

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FOREWORD

To many readers, educational technology today is nearly synonymous with what has been labeled as "high technology"—satellite broadcasting, television by cable and broadcast, microcomputers, and direct instructional applications of automated data bases. The organizing of information into purposive messages, however, is at the heart of the development of a technology of instruction, and a general educational technology. The vast array of communications tools at our disposal to accomplish this job always impresses.

This latest in the series of books of readings from AUDIOVISUAL INSTRUCTION magazine has to do with what many of us in this professional field have come to regard as basic or conventional communications media-slide tape presentations. The growth of photography as a general activity among the citizens of this country has been phenomenal. Nearly every elementary child has been exposed to the 35mm slide. It is probably one of the most easily used, technically and operationally, media that we have in our inventory.

This book of readings is dedicated to serving as a reference and book of ideas on the use of slides in combination with audiocassettes for presentation design. Included here are some basic tips on putting together a presentation, techniques for improving the visual images, how to make title slides, a section on equipment, and examples of use in operational situations. The book of readings concludes with some notions that are labeled as innovative ideas, but I suspect that there are ideas throughout the articles in the book which the interested reader will find useful.

Particular thanks should be extended to Marilyn Coughlin of the AECT staff for ferreting out these articles initially. It is our hope that these basic ideas on visual presentation will move the field forward.

—Howard Hitchens—Editor

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THE BASICS OF A SLIDE-TAPE PRESENTATION

PREPARING A SLIDE-TAPE PROGRAM: A STEP-BY-STEP APPROACH

MACK RYAN

A slide-tape production can serve as an initial step in opening the doors of creativity for teachers and students. Both can find great satisfaction in creating a product that they feel is useful, that requires the application of skills, and that can be enjoyed by others. An effective teaching tool, a slide-tape program can be designed based on specific objectives in nearly any subject area.

The budget for producing a slide-sound program is modest. The raw material costs for a 10 to 15 minute production total about $15.00. This includes the price of the audiotape and the processed film. The price of the audio and the photographic equipment will vary according to the level of sophistication and convenience desired by the purchaser, with a range of $200 for a basic audio-photographic unit to $1,000 and up for more advanced equipment. Add $200 to $300 to these costs for a projector and a screen. This is not an exorbitant investment for tools that permit the development and implementation of instructional programs tailored to local needs.

Slide-tape packages provide a very convenient and flexible instructional program. Slides are easily stored in trays, carousels, cartridges, or files and can be organized, arranged, or rearranged to suit the needs of the user. Simply replace an old slide with a new one if there is a need to update the presentation. Audiotapes and cassettes also lend themselves to modification and updating by means of the erasure and rerecord features on the audio machines. The combined visual-sound production can be packaged, easily indexed, and stored in locally or commercially manufactured lockers for easy accessibility.

Because of the operational simplicity and portability of the equipment involved, slide-tape programs lends themselves to a variety of instructional settings. This type of media can be utilized effectively in a number of ways, including individualized study or repeated presentations with large and small groups of students. Programmed and self-paced packages for independent study or sophisticated high fidelity multi-image projected programs are within the range of this medium.

Once you've decided that a slide-tape program will best convey your instructional objective, how do you go about producing one? Begin the process by examining the purpose of the program. What are you trying to achieve with the presentation? Will it relate to the current instructional program? Is its aim to instruct, to motivate, or to do both? What information and attitudes will the audience bring with them? Do you want to provide students with additional information? Do you want to change their attitudes? Contact your working colleagues who are interested in the project and solicit their suggestions for the slide-tape project. Once this phase is completed, simply list the ideas you plan to include in the program and research them to insure that no major ideas or facts have been overlooked.

A complete "outline" is now in order. Include in it the content as well as any other ideas or visual images that have come to you as you explored the purpose of the program and examined the research material related to it.

Now obtain a pack of blank 4" x 6" index cards. Start writing down or drawing crude sketches (whether you write, draw, or do both at this stage depends on your verbal or visual orientation) of ideas or facts about the program as you think about them. (This is where the outline will serve as a valuable reference tool.) The interaction between your thoughts about the program and expressing them in writing or in a visual form will generate a script. If you think of a point as you concentrate on an idea, try to state it in as few words as possible or prepare a rough sketch of it. Put each idea or fact on a separate index card, with the sketch in the upper left hand corner and the statement underneath it (See *Figure 1*). Go back later and complete the card if either the statement or the sketch has not been added.

Lay out the 50 to 100 cards you have prepared on a large table and arrange them in an order that makes sense. For a better view of your work, tack the cards in sequence to a large wall board (See *Figure 2*) if it's available. It helps you visualize what your final product will look like and is an excellent way to find likely trouble spots before final production. Associates can also be invited to look at it and make suggestions about its probable effectiveness. Take the time to make your critical decisions at this point. By following this procedure, you will have to make fewer major changes during the hectic, frantic period of writing, photographing, and recording.

Ask yourself some hard questions as you examine the planning board. Are the visuals related to the text? Are they easily "read"? Are they too cluttered with information? Is the language simple and direct? Is the scheme of arrangement logical?

With the planning stage completed, you are ready to proceed to the next step. A high-quality slide-sound presentation requires a good script. This can be

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1

THE AGE OF HOMESPUN

MUSICAL BACKGROUND

6

Photograph: Woman at Loom (Medium Distance Shot)

FARM HOUSE WIVES WOVE CLOTH OF PURE WOOL

Figure 1

achieved if a number of principles are adhered to in its preparation. These revolve around the script's organization, narration, visuals, and sound. Let's move to the first element of the program, its organization.

Go back to the index cards tacked up on the planning board. Again examine them closely and arrange them to insure that the program will develop in a logical, organized sequence. It should have a beginning, a middle, and an end. The beginning should give only essential information and point the audience in the direction you have set for them. Too much information in the beginning can confuse your viewers. The middle should build on the information given in the beginning. Some of the cards will have to be discarded, others modified, and new ones added to the board. During this organizational process it will help to keep the following guidelines in mind:

1. Avoid the inclusion of too many concepts. It is much better to develop one concept clearly than to include several incomplete generalizations.
2. Avoid a lengthy introduction. Catch the students' attention quickly by the visualization of a problem or other stimulus device.
3. Set the stage at the beginning of the presentation to let students know what it's all about.
4. Organize with the progressive disclosure or "reveal" technique in mind. Begin with the known and progress to the unknown.
5. Weave the theme throughout the program.
6. Reinforce or summarize thoughtfully.
7. Whenever possible, employ comparisons with the present to make the information more meaningful.
8. Encourage student participation and involvement by asking questions that relate to the students' own experiences and observations.
9. Include human sidelights whenever possible indicating the role the individual plays.
10. Try to bring out the value systems of the people: what they are and what the social structure does to support these values.
11. Apply the human element to inanimate objects (e.g., buildings, tools, etc.), by explaining what goes on there and how it's used.
12. Use pointed examples for simplification and clarification. "Make the invisible visible" by using analogies and illustrations that can make an abstract idea concrete.
13. Use art frames for review and ask questions that will stimulate discussion whenever possible.
14. Be careful of using symbolism, particularly with slower students.
15. The optimum duration of a slide-sound presentation will depend on the amount of narration. The maximum length for the elementary grades should be 10 minutes, and 10-15 minutes for the secondary grades. Usually 50 slides will be a sufficient number for the program.

After organizing the program, focus on your visuals. They should carry the weight of the show. The narrative should flow from the slides. Otherwise, you will have just a narrative with slides added. Test their practicality. Are some of the scenes too far away to photograph? Is there a picture at hand you can copy? How complex will the art work be? Is the material you want to copy copyrighted and therefore a release required from the publisher? Are any of the scenes you plan to shoot too controversial? Include information on the card about shooting location, camera angle, lighting, and art work. This will save time when you get to the production phase of the project. Your presentation will also be more satisfactory if you refer to the suggestions listed below when working with your visuals:

1. Be careful of giving too much detail in the visual.
2. Select visuals that display action.
3. Use charts and graphs sparingly because

Figure 2

they are difficult to follow and because there is not much time for study and comprehension.
4. Avoid using a map for the first slide after the title slide.
5. Avoid multiple panel and montage visuals (several pictures on one slide) as much as possible except for comparison or for showing progression.
6. Whenever possible, include people of more than one race or sex in the visuals.
7. Don't use "pick-ups" or repeat art visuals. Get variation through long views, close-ups, and angle shots.

Once you feel the organization and visuals are set, start writing the narration. Don't be discouraged if it takes two or three drafts before you come up with a polished narrative. Just remember that you will get better at it as you prepare additional programs. To help you improve your writing, observe these rules as you set about the task:

1. Keep the narrative as conversational in style as possible. ("Read" into a microphone without the script and then playback and edit the narrative.)
2. Use short, clear sentences, with only one idea per sentence.
3. Use a vocabulary appropriate for the grade level. Explain any terms that may not be familiar to students at this grade level.
4. Use only one idea per slide. Make certain that the text "codes" or applies only to what is shown in the visual. Always start a frame with something directly related to the picture on the screen.
5. As far as possible, keep sentences in the present tense, except in historical matter or where the past tense is grammatically required.
6. Do not break sentences from one visual to another unless you can maintain continuity.
7. Vary the length of the narration from frame to frame to avoid monotony.
8. Occasionally insert a question to encourage the class to do some thinking
9. Avoid more than one question in a frame.
10. Avoid beginning frames with "For example" or "For instance".
11. Avoid use of the all-inclusive terms: "all", "none", "every", and "always".
12. Avoid controversial statements.
13. Avoid negative statements; accentuate the positive.
14. Avoid phrasing that is colloquial, poetic, or subject to more than one interpretation.
15. The text should follow the eye path of the visual and/or labels—left to right, top to bottom.
16. Write concisely. Avoid using more than 50 words in one frame.

The last element of your script is the sound track. A sound track can add another dimension to your show. It increases interest, adds impact, creates a mood, and punctuates the major points of the program. It can also be used to automatically pace the presentation, given the appropriate equipment. Music, interviews, sounds of machines, vehicles, animals, rain, wind, and a host of other sounds can be added to the sound track to make the presentation more effective. However, caution should be exercised to insure that the audio doesn't overwhelm the visual character of the program.

These additional tips can help you in preparing the sound track.

1. Vary the commentary, if appropriate, by using more than one narrator.
2. Avoid using words that are uncommon, foreign, or subject to misinterpretation because of similarity in scund to other words.
3. Choose a musical background that is compatible with the theme of the program.
4. Identify in the script the cues for music and sound effects and advancing the slides.

Everything is now on paper—organization, narrative, visuals, and sound track. This first draft is now complete. Leave it for a few days and then go back to it. Revising will be necessary. Lengthy sentences will have to be shortened. You will have to find substitutes for terms that are too difficult for your students. Some of the visuals may lack human interest and should be revised. The need to code the first sentence of the narration with the visual might have been overlooked in some instances. These errors along with others will be identified and revised. Now go to some of your associates or your students and obtain their reactions to the script. A major revision of the script is not necessary if they indicate they got the message and understood it.

Pretend you already have a completed program with the slides loaded in your projector. Tape the talk and follow the cues in the script as you record. Play it back and check it for the flow of the narrative. Some minor changes will probably be in order based on this preliminary recording/playback session and the suggestions provided by your peers. After successfully comp'eting this preliminary test, you are ready to move to the production phase of the program's development.

PART II

Are you surprised when you see an eight-year-old snapping pictures with an instant, automatic camera? Probably not. Technology has enabled people of all ages to produce photographs of acceptable quality with cameras that are both inexpensive and automated. With confidence that you, too, can operate a camera, you are ready to produce the visuals for a slide-tape program.

When selecting a camera for this task, consult someone with considerable knowledge and experience in photography. The audiovisual director, a peer who is an amateur photographer, or a sales representative in a reliable camera store are usually good sources. Explain why you are purchasing the camera and how you plan to use it. The type of camera you choose will depend on your (or the school's) budget and the kinds of slides you want to produce. If copywork is

involved in your project, a Kodak Ektagraphic Visualmaker or the more sophisticated 35mm single lens reflex cameras are likely suggestions. Perhaps your institution already has a camera that will do the job. Master its operation with the assistance of someone who has used it. Make sure the camera will produce quality slides. This can be determined by shooting a test roll of color film. The shooting exercise will also give you confidence in handling the camera. Your first set of color slides can do wonders for your morale and encourage you to continue toward your goal.

What type of film should you select? Color should be used. Not only is it pleasing to the eye, but it also represents reality. An apple, a burning flame, or a sample of blood doesn't have much impact when seen in a black and white photograph. If most of your scenes are to be photographed indoors under artificial light, determine whether the lights are tungsten or fluorescent and match your film to the lighting conditions. If lighting conditions are poor, you can use flash bulbs or electronic flash equipment. Outdoor shooting in the daylight hours, barring a storm, is less trying than indoor work. Most of the medium speed films will produce very satisfactory exposures. When a lighting problem arises, consult the local camera dealer or an associate who is an experienced photographer.

You are now ready to start shooting. The camera is loaded and you have several rolls of film stashed in your pockets. Wait! Don't forget to check your planning cards. They are your guides to shooting and should be at your fingertips. Study them and determine the locations for photographing the different scenes. Group the cards according to the proximity of one scene to another, and then schedule your picture-taking accordingly. This step makes it unnecessary to return to the same location more than once.

Space doesn't permit a complete discussion here of the shooting techniques of still photography. Eastman Kodak publishes a number of excellent books for this purpose; especially recommended is Kodak's *Here's How* series. The suggestions listed below provide some tips for improving your photographs:

1. Avoid visual monotony by varying the shooting distances. Try close-up, medium-range, and long shots.
2. Use different camera angles, including low-angle, high-angle and eye-level shots. By adjusting the camera angle, different moods and illusions can be created that will add interest to the show.
3. Select shutter speeds that will enhance the "action" quality of the photograph. Panning a moving vehicle with your camera at a slow shutter speed will provide a clear picture of the vehicle but blur the background. This technique can give the audience the feeling of motion as they view the photograph.
4. Take at least three exposures of the scene, particularly if the lighting is contrasting. The light meter, whether it's in the camera or the handheld type, can be fooled. Make the first exposure based on the lightmeter's reading. The second exposure should be made one stop over, and the third, one step under the exposure indicated by your light meter.
5. Avoid camera movement. Brace yourself against a wall or place the camera on a stationary object, particularly if a slow shutter speed (1/60th of a second or less) is used. Use a tripod if it's available, when you are shooting at a slow shutter speed.
6. Compose the picture carefully in the viewfinder before releasing the shutter. Be sure all the elements you want included in the slide are seen in the viewfinder and are in focus.
7. "Squeeze" the shutter release button with a slow, steady movement.

Limit the number of titles you prepare for the slide-sound program. This is a visual-sound medium—not a print medium. In addition to titles at the beginning (introduction) and end (summary), you might want to include a few that bridge gaps or pose questions. Particularly effective are ready-made titles that can be found in your community. These include street/road signs, theater and store marquees, and community, civic or business signs ("Senior Citizens Meeting Today," "County Historical Exhibit," "Office of the Mayor," and "Think"). Some of your art students can help in the artwork and lettering that goes into titling. Other students can search books, magazines, and newspapers for illustrations that can be included in title slides. Two excellent articles in the May 1974 issue of *Learning Resources*, "Titling for Slide Presentations" and "Making Title Slides," provide additional information about preparing slide titles.

Let's assume that your script calls for a number of visuals that require copystand work—illustrations from newspapers, magazines, books, and titles for the slides. A copystand can be purchased rather inexpensively from a photography store. You can also construct

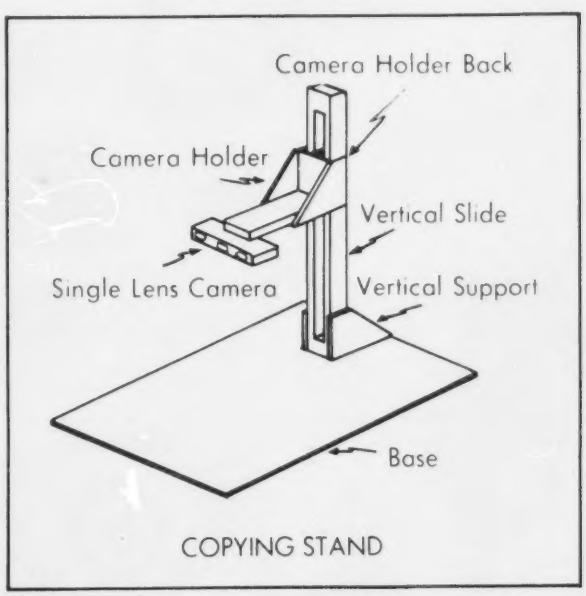

Figure 1

one for about ten dollars. The device shown in Figure 1 consists of a plywood base 30 inches by 36 inches, with a vertical track approximately 24 inches high attached at one end of the base. The camera can be fixed to a moveable block on this track that can be lowered or raised to the proper elevation, depending on the size of the object to be photographed. Scraps of black felt or black paper will serve very nicely as a mask for the picture to be photographed. Two photoflood lights can be placed about 30 inches from the center of the copyboard and at an angle of 45 degrees to the lens axis for even illumination of the object to be photographed. Auxiliary magnifying lenses for close-up work will cost approximately $4.50 each and the lens adapter itself costs about $4.50.

The number of magnifying lenses needed depends upon the size of the pictures to be photographed and the size of the subject will determine the type of lens to be used. Using a +1, +2, or +3 portrait lens in front of a standard 50mm lens, you can copy subjects from 18 inches by 26 inches down to four inches by six inches. With careful preparation, the reproduction can be just as well defined as the original; even the original captions can be legible when projected. Consider also the Kodak Ektagraphic Visualmaker if you are operating on a limited budget. It comes equipped with an instamatic camera, a copystand, lens, and flash unit that will copy work three inches by three inches or eight inches by eight inches.

The script is prepared and the visuals, including the titles, are ready and loaded in the projector. All that remains to be done to complete the slide-sound program is to record the narration and any background sounds or music. Find a suitable location for this activity. A sound studio would be ideal, but if that's not available, select a setting that is isolated from external noise and frequent interruptions. Check out the acoustics of the room by making a short recording and playing it back with the volume control turned up. Listen carefully for any extraneous sounds that are being picked up and try to eliminate them. When you are satisfied that you have a quiet location for your recording session, assemble your equipment.

The level of sophistication of your program and the audiovisual equipment that is available will determine your equipment needs. You will need a slide projector, a reel-to-reel tape recorder or cassette recorder, a microphone, a slide projector, and the script. Additional equipment will be required for a more sophisticated program, including such items as a sound mixer, another record player, or tape recorder with music or sound effects on the record or tape, or a tape recorder/projector synchronizer. A word of caution—stick with the fundamentals and master them before you move into the higher levels of electronic gadgetry.

Set up your equipment. Place the projector as far from you as possible so the microphone doesn't pick up the whir of the projector's fan or the sound of its slide change mechanism. If you are still picking up noise from the projector on your initial test recording, try to place a baffle (e.g., a cardboard box with a hole cut out for the lens) over the projector (keep adequate ventilation in mind). Place the microphone on padding thick enough to deaden any vibrations that might be picked up from movement within and outside of the recording area. The remote control unit for the slide projector, the tape recorder, and microphone should be close at hand. It also helps to have the script resting on a portable reading stand for easy reading (see Figure 2). Request the assistance of another person if you feel that the recording session could go more smoothly with another pair of hands.

Figure 2

Several trial runs in recording the program will probably be necessary. As you move through the script, you will learn to pace the narration so that the show moves briskly. The cues for slide changes will be revised so that the length of time each visual remains on the screen will vary from slide to slide. A range of one to 15 seconds for the slide changes should be about right for maintaining the interest of the audience. Audible cues can also be recorded on the tape to communicate to the operator that the slide should be changed. This can be done with the tap of a pencil as each slide is advanced, but be careful that the audible cues don't detract from your show. As you record, check the recording indicator on the tape machine from time to time to see that it is set at an appropriate recording level. Handling the microphone properly can present a challenge. Try not to hold it too close to you; a distance of about one foot should be about right. Speak past the microphone rather than directly into it. By following these suggestions, your voice will sound more natural on the recording.

Careful preparation is required for the presentation of your slide-tape show. If you wait until your audience arrives before setting up and testing your equipment, a number of embarrassing surprises might await you—the electrical wall outlet may take a two-pronged electrical plug while the projector's extension cord has a three-pronged plug; the lamp in the projector may burn out as you turn it on; the slides may be loaded right side up in the carousel so that the images are projected upside down; the tape recorder's exten-

sion cord may not reach the electrical outlet; the projector may be located too close to the screen so that the image projected is too small; the window shades may be inadequate for blocking out the sunlight; and, the seating arrangement may make it difficult for some of the viewers to see the screen. These problems can be overcome by setting up and checking the operation of your equipment well ahead of the time for the scheduled presentation.

When the audience arrives, tell them about the topic of your presentation and explain how it relates to the subject they are studying. Inform them of the major objectives of the program. This helps them to zero in on the more relevant aspects of the presentation. Don't overdo the introduction, lest the program become a lecture-slide-tape presentation.

Whether or not the sound-visual program is aimed at introducing or summarizing a topic, the plans should include provision for a discussion of the topic after the showing. This requires you to prepare a few questions dealing with the topic beforehand. Responses to these questions from the audience will give you some indication of your success in achieving your goals and your success as an adventurer into a new medium.

Meeting the challenge of producing a stimulating slide-tape presentation can be an individual or group triumph. For the teacher who is interested in group activity, it offers opportunities for student planning and cooperation. One group might be assigned the job of searching for photographic material for the program. Another group could screen the incoming material. Other groups could prepare the script, shoot the visuals, do the recording, and operate the equipment. A test group could be organized to prepare questions for discussion or examination. Faculty and staff members from other disciplines could also be involved to make it a truly multi-disciplinary production.

The value of the slide-tape show as an educational and creative tool should not be underestimated. It attracts student attention, arouses interest, tests student understanding, and allows the teacher great facility of selection. Its versatility, ease of preparation, and low cost make it a valuable teaching medium.

SCRIPT CARD TO STORYBOARD

BRUCE R. LEDFORD
GORDON THOMAS

Storyboarding is a technique that provides system and control in media software. It can be applied to any form of media, including slide sets, filmstrips, motion pictures, television, audiotapes, and even print media. The technique requires only a supply of note cards and a large wall or table area.

The Cards

Cards are used primarily because they are durable and self-supporting. They are relatively inexpensive and easy to obtain. The 5" x 8" card is a convenient size. The card should be divided as shown in Figure 1. This division can be hand drawn with a straight-edge and a felt tip pen, or it can be printed. Hand drawing can be very time consuming, so it may be useful to have a supply of these cards printed professionally.

The three sections of the card are used to develop (1) narrative, (2) visuals, and (3) status and objectives. The upper left section can be used to sketch illustrations and ideas or to describe them verbally (see Figure 2). The source for the idea can be stated for reference. The illustration should be in direct support of the narrative.

The upper right section of the card contains the status information and objective. The status information that provides the control system includes art work, photography status, processing status, return of film from processor, whether the completed visual is put into the program or filed, and file status. Other information contained in this section includes the number of the scene or its position in the program, the medium to be used, and a statement of the objective for the card (see Figure 3).

The narrative is written in large letters on the bottom section of the card. All the narrative pertaining to the visual should appear in this section. The narrative for one slide should not exceed 45 to 50 words. If another medium is used, or if the space is not large enough, go to the next card, continue the narrative on it, and leave the upper sections blank except for the word "Continuation" in the upper left section. This technique should make the narrative coherent and contiguous (see Figure 4).

The Storyboard

The storyboard can be a cork or ply board on which clear plastic strips have been stapled. The better strips have a beaded edge that implements the insertion, holding, and withdrawal of cards. A tentative order within the cards can be arranged by placing them in

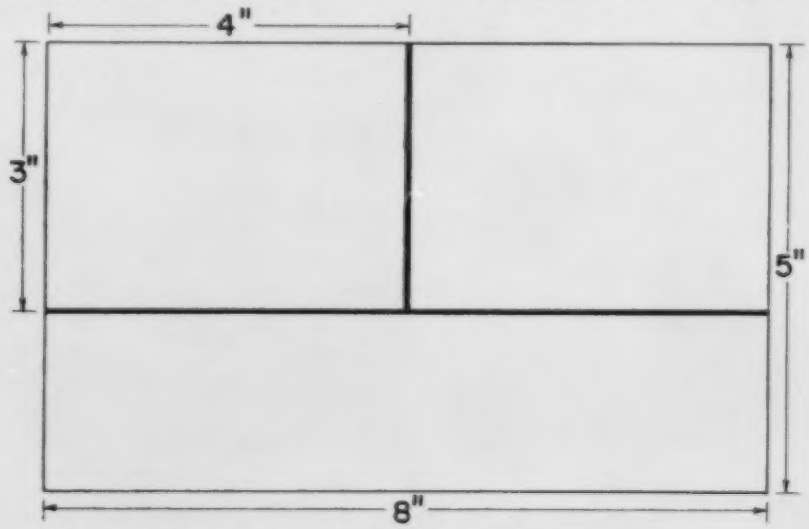

Figure 1

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SOURCE ORIGINAL ART (CARTOON)

Figure 2

SOURCE ORIGINAL ART ((ARTOON)

☑ ART NUMBER 46
☑ SHOT
☑ PROCESSING
☐ RETURNED
☐ PROGRAMMED
☐ FILED
MEDIUM SLIDE
OBJECTIVE: TO EMPHASIZE STEP 2 " TAKE THE EMOTIONAL ADJUSTMENT TEST "

Figure 3

SOURCE ORIGINAL ART (CARTOON)

☑ ART NUMBER 46
☑ SHOT
☑ PROCESSING
☐ RETURNED
☐ PROGRAMMED
☐ FILED
MEDIUM SLIDE
OBJECTIVE: TO EMPHASIZE STEP 2 " TAKE THE EMOTIONAL ADJUSTMENT TEST "

AFTER COMPLETING THE SPEECH PROFICIENCY TEST, THE NEXT STEP IS TO TAKE THE EMOTIONAL ADJUSTMENT TEST.

Figure 4

the story board from left to right and from top to bottom. Skip every third or fourth space on the board to allow for easier editing (see Figure 5).

Selecting cards and placing them on the storyboard has several purposes:

1. They give the designer an integrated overview of the organization.
2. They allow for easy sequencing and rearrangement.
3. They allow for easy deletion and replacement.
4. They allow for easy revision and refinement.
5. They allow for convenient abridgement between cards to provide or enhance continuity.

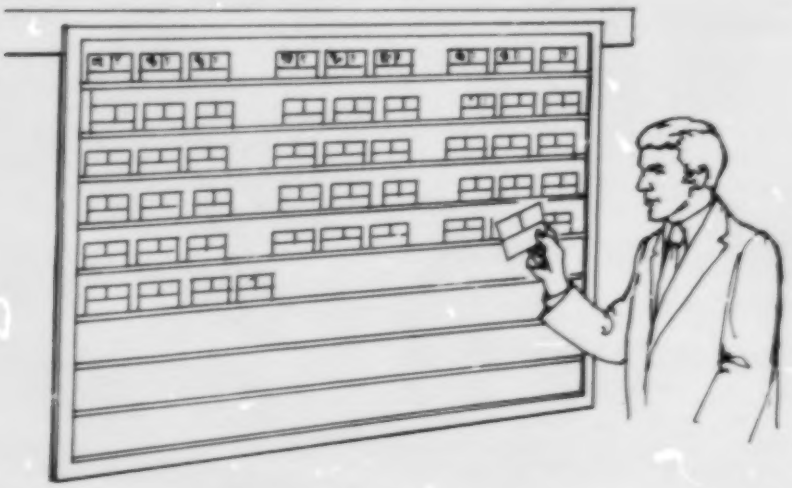

Figure 5

FOCUSED NARRATIONS

MIKE LEWMAN

Very little has been written about the way narrations are done for various types of audiovisual presentations. I'm not talking about the way narrations are *written*, but how they are *read*. Many people do not spend enough time to make their narrations as effective as possible. We can all tell, or at least we think we can, when a photograph is out of focus. But not many people can really tell when a narrator is focusing on what he is reading.

In general, audio is often the forgotten child in multi-media presentations. And within the audio segment, narrations can really get slighted. Narrations are often put off until the last minute when somebody finally realizes there is a script which has to be read. There are lots of people who can read well, that is, they can pronounce most words correctly, recognize punctuation, etc. But few people have the particular kind of awareness necessary to transcend the "read-i-ness" of a script and communicate ideas. For a narration to be effective, you must become involved with what the script says and to whom it is being said.

In a poorly done narration, the narrator comes across as if he is talking down to his audience. Unfortunately, educators are among the worst at talking down to people. They may sound to themselves like they are really interested in what they are reading or saying, but the audience frequently is made to feel inferior. It is a problem generated by the mind set "I know and I'm telling you." In the classroom or recorded on tape this approach can really turn kids off. Kids and adults all resent being talked down to. It's boring, offensive, and the last thing in the world you want to come across in a narration.

Despite what you might think, it is possible to narrate as though you are an intellectual contemporary with your audience, regardless of any age difference. Instead of approaching the narration as "I know and I'm going to tell you," pretend you just happen to know about the topic in the narration and you want to share it with the audience. Be believable. It is often helpful to pretend that one member of your audience is just across the table from you and you are going to relate this meaningful information to him on a one-to-one basis. In an effort to try to clarify how a narrator can get himself "into" a narration, try the following experiment.

Imagine that you are charged with producing a slide-tape presentation designed to orient sixth grade students to a new junior high school. You have talked with the junior high guidance staff, sixth grade teachers and the junior high and sixth grade students. You have determined that there are a number of problems and misconceptions that incoming junior high students are scared by the immense physical size of the junior high building. The new students are filled with apprehensions about all the "unknowns" lurking behind those ominous school walls.

The opening slide in your program is a shot of this massive, concrete school building. There is suspenseful background music and the narrative reads:

"Well, there it is . . . Southside. Sort of scary looking, huh?"

The background music segues to bright cheerful music, we see a medium shot of a smiling student, and the narrative continues:

> "We hope you don't think Southside Jr. High is a scary place because it really isn't. It's just a school. Maybe bigger than the school you've been used to, but nevertheless just a school."

How would you approach doing this narrative or how would you direct someone else to do it? It would seem that there are a number of ways to approach the problem. Think about the fears that you probably had when you entered a new school. As you read, let the understanding and compassion that you would like to have heard when you were uncertain come through to allay the apprehensions of your young audience. With those memories and that situation in your mind, read and record the narrative segment described. Listen to the recording you made and ask yourself critically, "Does that sound like one person talking compassionately to another or does it sound like someone reading something they're totally uninterested in?"

Another possible way to get "into" this narrative might be to picture yourself sitting on a curb with a friend looking at this massive school. You were in junior high last year and your friend will enter this year. See those two figures in your mind and think about how two kids that age would probably talk to each other about the school. With this "actor picture" in your mind, try the narration once more. There are certainly other ways to approach this narration, but hopefully this illustrates the kind of thought processes you can go through to really make your narrations do what you want them to do.

Involvement with the words and phrases in a nar-

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rative script is critically important. Instead of just seeing words, you need to practice being able to see word pictures. Some words are chucked full of life and personality. They have "flavor" and they conjure up images. You have to see these word pictures as you read if you are going to get involved in what the script is trying to impart. Your voice must evoke the activities and moods that are in the words. If the words are happy, smile as you read and let that smile come through as a happy, smiling voice.

If a script is a descriptive one, reading it very carefully in a regular manner can be deadly. Don't be afraid of "white space"; in other words, don't be afraid to pause in the script. Variety in pacing as you narrate makes listening interesting and more natural. You will sound more conversational. Listen to people's conversation and you will hear lots of pauses. Silence is like negative space in design; it is as important as the sound in a good narration.

Don't be afraid to emulate the natural pattern of the way people speak. You should narrate the way people talk. Let your voice go up and down for emphasis. Read slowly, then quickly, trip through some phrases or sentences. If you read a script carefully, you will find it has some phrases or sentences which can be "thrown away." They are not critical to the overall meaning or effect of the script. By doing this, you can then focus more verbal attention on the important operative words and phrases in the script.

A repetitive reading pattern with roughly the same number of words between each pause can be distracting and cause the listener to become restless and not focus on what is being said. This can be avoided, however, even with slide or filmstrip narrations which by their very nature tend to be broken into regular segments by the dictates of each individual slide frame. You can improve these kinds of narrations by "punching" some words, muttering others, and "tossing off" some. There has to be a variety to hold the listener's interest.

One big fallacy about narrating is the assumption that all the punctuation placed in a script to make it syntactically correct must be respected when it is read. The truth is the scriptwriter can foul up a narrator with punctuation and the compulsion to write every thought in a complete sentence. Good narrations should be written the way people talk and people do not always talk in complete sentences. As a narrator you should not be afraid to put your own marks on a script. Put in slash marks for pauses, place parentheses around phrases or words you can "throw away," and underline operative words and important phrases. As a general rule, the punctuation that is necessary to make a sentence grammatically correct may make it sound stilted when it is read. Commas, for instance, may be necessary in the written sentence, but they all do not have the same meaning or require the same type or length of pause when read. Be ready to accept some grammatical errors to make the narration flow more smoothly and be more effective.

Involvement with a narration must be physical as well as psychological. Sitting like a statue, moving only your mouth as you read, will make the narration sound lifeless and dull. Movement is important. As you narrate use your hands to gesticulate for emphasis just as you probably would do if you were relating the content of the narrative face-to-face with your family or friends. You will probably have to physically smile as you read to get a smile into your voice. If the script calls for a weighty or authoritative sound, slow down and use lots of diaphragmatic energy to give your voice more authority.

Your physical position as you narrate can have a lot to do with how you sound. Don't slough over a pile and not move. Sit on the edge of your chair as you read or stand up. By sitting straight or standing up you are able to use more air and get more diaphragmatic energy and enthusiasm into your voice. Try holding your script up at eye level as you read. This straightens up your whole torso and lets you get more energy and physical involvement into your reading. Remember, your eyes, mouth, hands, and arms can all be used to help convey meaning to the listener.

The overall attitude you have toward a narrative script cannot be overemphasized. If you really listen, you can hear a preoccupied reader—one who isn't focused. You must concentrate on what is to be said, to whom it is to be said, and how you're going to say it. Who are you going to be, where are you going to be, just what "actor pictures" are you going to see as you read the words? You cannot be thinking about something else as you read. You will probably find that lifting the level of concentration to maintain your "focus" on a script can be physically exhausting. But by expending the energy to maintain that focus, you will also find your narrations will improve immensely.

There are some people who read for a living who are not always "focused" on what they read. The really accomplished professionals, however, do understand how important it is to narrate the way people talk. When we listen to them we don't get the feeling they are talking down to us. They come across as one person "focused on" and speaking to one person.

You might feel that you have to be a professional narrator to develop all the narrative techniques described here. This is not true. If you will really listen to the narrations you are involved with and if you will try some of the techniques described here, you may be pleasantly surprised at how much more effective your presentations will be. For years we have spent lots of time with scripts worrying about what we are going to say. It's about time we concentrate *how* we say it.

2
TECHNIQUES FOR SLIDES

SHORTCUTS TO BETTER SLIDES

C. HUGH GARDNER

The beginning or occasional photographer usually encounters a few persistent problems. This article discusses many of those typical problems and ways to overcome them so you can produce better slides.

Most of the recommendations relate to adjustable cameras—either those set manually by the user or automatically by internal camera mechanisms. But don't feel left out if you use a nonadjustable camera—many of the recommendations relate to techniques rather than equipment.

Selecting A Camera

The new electronic shutter cameras are the best thing yet for the occasional user, or even for the more serious photographer who wants to spend more time on picture composition and less on technical adjustments. Of course, this means an initial investment of $100 or more. But equipment which helps you produce a greater percentage of useful slides will be less expensive in the long run.

Recommendations about which model or brand of camera to purchase are beyond the scope of this article. But a few general guidelines may prove helpful.

1. If you want to do much with close-up photography or if you eventually want to own a telephoto or wide angle lens, then buy a single lens reflex camera. Don't waste money on rapid film transport systems; amateur photographers should take more time and care in setting up each shot, not less.

2. The recommended film size for color slides is 35mm or 126 cartridge. Of the two, 35mm has a greater variety of film choices available. The rectangular format of 35mm appears more natural since it closely matches the proportions of movies and television. The 126 cartridge format does have one notable advantage, however—instant, "foolproof" film loading.

3. Within any given format, buy the smallest and lightest camera which has the features you need. Cameras that are left at home because of their size or complexity are poor investments.

The Film Loading System.

The most persistent problem of the 35mm camera is the film loading system. Here are some of the more frequent mistakes the beginner usually makes:

Problem: Fails to properly engage a fresh roll of film onto the takeup spool and then proceeds to shoot without ever moving the film.

Solution: Observe the movement of the rewind knob during film advancement. After the back of the camera has been closed and the process of advancing film to the first exposure position begins, watch for an occasional movement of the rewind knob to make sure the film is being withdrawn from the film cartridge. A certain amount of free play exists, so don't expect a constant turning of the rewind knob.

Problem: Assumes the camera is loaded and shoots with an empty camera.

Solution: Turn the rewind knob in the direction of the arrow to make sure there's film in the camera. If it is not snugged up tight after three or four turns, the camera is undoubtedly empty.

Problem: Correctly assumes the camera is loaded with film but incorrectly remembers the film type and ASA rating.

Solution: Tape a note or part of the film box to the camera as an aid to remember what type of film is in the camera.

Problem: Fails to rewind the film safely back into the cassette before opening the camera.

Solution: Redo the rewind procedure before attempting to open the camera.

Inadvertent Camera Movement

Probably more pictures are ruined by camera movement than any other single factor. If your pictures exhibit a general, overall blur, this is one of your problems.

The cure is to hold the camera so that you can "pinch" or "squeeze off" the shutter release rather than push at it. You can practice this technique with an empty camera.

Tape a small pen flashlight on the bottom of the camera with the bulb facing toward the front. Get in a darkened area where you can see the spot of light from the flashlight. Stand about four feet from a wall and look for movement of the light as you attempt to hold the camera motionless. Now squeeze off the shutter release. If you can see the flashlight spot move, you know you need more practice. If you are using a single lens reflex camera, shift your eyes slightly and look past the viewfinder directly to the wall.

If you try the flashlight technique with an empty 126 cartridge camera, you'll have to open up the back of

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the camera each time and trip the small lever at the film plane so the shutter release mechanism will be unlocked.

Backlighted Subjects

Probably the second most frequent error is made in photographing backlighted subjects with automatic exposure cameras. People generally turn away from bright light sources for added eye comfort. If you want to photograph people naturally rather than pose them, you'll find yourself fighting this uphill battle.

A quick solution is always to use front or side lighting on your subjects so that your automatic camera can give you a correct exposure. Or, take pictures on slightly hazy days when overall lighting is more even . . . or use open shade or fill-in flash.

A general recommendation for the beginner: avoid backlighted subjects when using an automatic camera or when taking a light meter reading until your expertise can help you solve all the variables.

Flash or Existing Light

Unless you own some special equipment, flash photography should be reserved for subjects at a range closer than 25 feet. Aside from exposure problems of flash, the general appearance of most photos could be improved if a high speed film and existing light were used. This helps avoid the unnatural appearance created by a single light source. Electronic bounce flash is another solution, but initial cost and exposure complications probably make this a poor recommendation for the beginner.

If your 35mm camera has an f/2.8 lens, use High Speed Ektachrome tungsten or daylight film to take indoor slides with existing light. Even if your camera is limited to a smaller lens opening—f/3.5 or f/4—you can still take indoor slides with existing light by getting the film processed at a higher ASA rating (check with your lab).

If you take indoor slides with existing light, it is very important not to include in your viewfinder image any windows or doors through which daylight can be seen. If you do, your automatic camera will adjust itself for this light and your indoor subjects will be badly underexposed. Just remember to select a camera position which "sees" only indoor light.

Focusing

With a rangefinder camera, getting the subject in focus should not be a major problem. If it is for you, then practice the adjustment of focus through the rangefinder and compare the stated distance on the camera focusing scale with the actual distance of the subject.

The mystery about what is commonly called focus for most amateurs is the variability of sharpness in the areas surrounding the subject. Sometimes the pictures appear almost the way the eye remembers the scene. At other times the background and foreground appear noticeably blurred.

The area that surrounds the focused subject that appears "sharp" in the picture is called the depth of field. The factors which can make this depth of field larger or smaller should be understood by every photographer. Any general book on photography will devote one or more chapters to unraveling the mystery. I'll limit my comments to the "rule of thirds." In applying this principle to achieve the best depth of field, the subject of the picture is considered to be an area rather than a single point. The area extends from the closest object of importance to the farthest object of importance. The camera should be focused on a point one-third of the way into the scene, going from the closest to the farthest subject.

Pictorial Merit

Now we come to the most elusive consideration. Entire books have been written on this subject. The intent here is to summarize the most frequent errors and give tips for their correction.

Most quality pictures have an easily identifiable *single* purpose. It could be a picture of your new car, or one of your friends, or your home. As three separate pictures, the problems of good composition are fairly easily handled. But it would be a rare photo that could properly compliment all three subjects in a single picture.

The solution, aside from taking each subject separately, is to move the camera in close enough so that each subject fills the picture area and the camera angle eliminates any distracting elements. This is always good advice, but for the 35mm or 126 cartridge camera it is a "must" in order to take full advantage of the relatively small film size.

The real purpose of a picture does not necessarily conform to the full outside dimensions of the object. For example, maybe it's the newly polished grill on your car, or your friend's portrait, or the flowers and landscaping around the front entrance of your home that really should be the subject of each picture. Photographers should ask themselves what it is that they really want to communicate with each picture and then fill the viewfinder with that particular subject.

When people are an important part of your pictures, be sure to have them busy doing something, rather than just staring into the camera. Probably the easiest way to get people to act at ease is to take so many pictures that they begin to ignore your presence. An old photographer's secret is to pretend to take pictures until you begin to feel that things are back to normal and then begin actually exposing your film. But be ready on each pretend shot for a real exposure.

Landscapes

Our landscapes photos seldom seem to evoke the same grandeur that we recall in the original scene. This is because our physical presence gave us a three-dimensional panoramic view of the entire area while the film in our camera received only a two-dimensional glimpse of one small area. Countless chapters have been written on how to use leading lines, foreground objects, frames, and other compositional devices to improve these limited glimpses . . . but probably the best advice that can be given on a limited scale is

to just carefully examine the image seen in the viewfinder of the camera. You should ask yourself if this image were an enlarged print hanging on the wall, would you enjoy looking at it. If not, then try some different angles or subjects.

Most photographers overlook countless photogenic subjects because they are only influenced by the three-dimensional panoramic view seen by their eyes. The shadows cast by a small section of ornamental ironwork, the plight of a small wildflower trying to push its way through a crack in concrete, or the struggle of an abandoned building against the elements of time may have great potential that is seldom noticed when our eyes and minds are focused on the total panoramic scene.

When you're taking slides, the film you expose in the camera is the final product. Every effort, therefore, must be made to consider all elements of composition, lighting, contrast, etc., at the time the film is exposed. Unlike the negative process, there will be no intermediate steps for cropping, color balance, etc.

Hopefully, this "inside information" will help you produce a greater percentage of slides that others will truly enjoy viewing.

MAKING THE MOST OF YOUR VISUALMAKER

C. HUGH GARDNER

Many innovations are like flash powder—one bright light and then they're gone. Two notable exceptions of the last decade, at least from the standpoint of the classroom teacher, have been the cassette recorder and the Kodak Ektagraphic Visualmaker. Both help fill a communication need, are relatively inexpensive, simple to operate, and give an almost 100% guarantee of a usable product. Unfortunately, the potential of the Visualmaker is not as well known to the average teacher. What the cassette recorder can do for recorded sound, the Visualmaker can do for recorded sight. What better partners could you ask for?

Since the Visualmaker has been around for some time, the chances are very good that there is one already in your school or at least several in your district. Hopefully, you know this to be the case and have used one on several occasions. In any event, the tips and suggestions given here should prove very helpful for future applications.

Basic Equipment and Supplies

A logical start would be to get acquainted with the equipment. The Visualmaker kit consists of a Kodak Instamatic X-35 camera and two copystands on which the camera may be mounted for closeup pictures.

The closeup capability is provided by a special lens built into each copystand; a single Magicube flash provides all the needed light. Thus no adjustments for light or focus need to be made by the photographer. One copystand provides for photographing an area approximately eight inches square; the other an area approximately three inches square. The decision as to which stand is best for each occasion and its proper alignments are really the only variables which give the user any concern.

As for the supplies, let's begin with the film. Normally, slides are the desired product. So, a 20 exposure roll of Kodachrome 64 or Ektachrome 64 in the 126 instamatic size should be procured. Of course, there are other fine companies besides Kodak that make film for instamatic cameras. If your purpose is to have prints instead of slides, then load the camera with either a black and white or color print film.

Next, you will need a sufficient number of flashcubes to expose your roll of film. The original model of the Visualmaker uses the regular flashcubes, but you are far more likely to encounter the later version which uses the new Magicube. Be sure to check first to see which you will need as they are not interchangeable. If your unit has the X-35 camera, it will need the Magicubes. To help in framing and composition, several sheets of different colored construction paper, a ruler, and a sharp knife are desirable.

Setting Up Equipment

The first step is to load the film into the camera. As you do this, inspect the interior of the camera. Blow away dust and wipe the inside lens if it is smudged. Finish up this housekeeping task by checking, and cleaning if necessary, the outer surface of the camera lens and the lenses of both copystands.

Let's begin by using the large stand. Open it up, and be sure to snap the side braces into their locking slots. Leave the focus setting at the beyond six-foot position on the X-35 camera. Place the camera lens into the open ring of the copystand lens and secure the camera with the tripod locking screw. Now insert a Magicube. If you have advanced the film to the first position, you are ready for your first shot. Place the stand on top of your desired copy. Alignment of the copy is accomplished by observing the U-shaped opening of the stand legs. Do not look through the camera viewfinder as it is of no value when the camera is mounted to the stand. Steady the stand by placing one hand on top of the camera and then use a finger and thumb of the other hand to "squeeze off" the shutter release lever. A click will be heard and the flash should go off.

Next, stroke the film advance lever one and one-half to two strokes until it stops. This will move the film to the number two position and rotate the flashcube to a fresh side. As you take the rest of your pictures, remember to put on a new flashcube after every four snaps.

Framing the Shot

Now for some more technical information. Said simply but somewhat inaccurately, the area between the stand legs will be photographed by the camera. The hitch is that the camera actually "sees" less than this area by about a half inch on the three sides surrounded by the metal stand. The bottom of the photographed area for the fourth side or open end is just about even with the tips of the side legs. If this seems like an engineering mistake, just remember that you wouldn't want to see the edges of the stand photographed onto your slides. For the same reason, don't

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draw border lines at this half inch point or try to cut copy exactly eight squares square. If you do, you will wind up seeing lines or tape tops on the edge of your slides. The safest practice is to let the picture or background paper "bleed" out to at least the inside edges of the stand. The photographed area will be less than this, but you won't have to worry about predicting the exact point.

Now for a second consideration about framing—the composition of the finished product. Generally speaking, important aspects of the visual, such as parts of a diagram and titles, should not extend to the very edges of the projected slide. So back to the old drawing board. When using the large copystand, important copy should not be more than seven inches square. In other words, you are now substracting another half inch from all four sides of the photographed area. This may not seem too confusing, but in actual practice it is difficult to visualize all of these considerations. The solution is to cut a piece of posterboard according to the dimensions shown for the large mask in Figure 1. By placing the mask on top of the stand legs you can now arrange your composition as you would like the finished slide to look. Remove the mask before snapping the picture and this difficult situation has become easy.

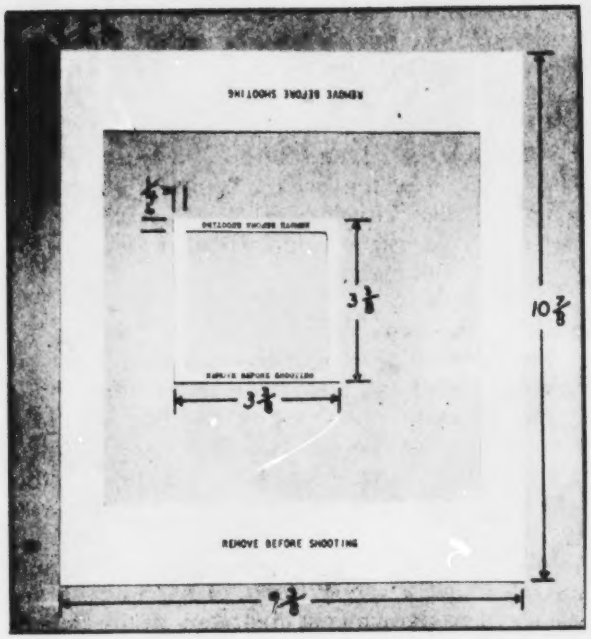

Figure 1

Figure 2 Using the large stand with a masking guide

Figure 2 shows the mask for the large stand in use. Note that the mask fits under the side braces and is pushed all the way to the vertical edge of the back frame. By constructing the mask out of a flexible material, it can be "bowed" at the center and moved upward if loose materials or tile letters are used.

A similar mask can be made for the small stand, but since all dimensions are magnified at this close range, subtract only one-quarter inch in both cases. Figure 1 also gives the proper dimensions for the smaller mask and Figure 3 shows it actually being used.

After some trial and error you may have to change some of the mask dimensions slightly for your particular Visualmaker. Slight variation is the penalty that must be paid for mass produced, low cost copy equipment.

Selecting the Copy

The simplest and perhaps most useful way to use the copystand is to make slides from photographs, drawings, illustrations, and diagrams from such sources as books, magazines, and circulars. Many different visuals may be brought together in a slide set and the uniformity of slides taken with the Visualmaker will belie their scattered origins. Labels may be laid on top of a picture before photographing and a specific part of a photo or diagram can be permanently indicated on the slide by laying a cut paper arrow in the appropriate place on the original.

The Visualmaker also makes it possible for teachers and students to prepare and photograph original artwork. Slides can be used to ask questions, summarize, give directions, mark divisions in material, or direct students to the next activity. They may be made, usually for the eight inch copystand, with crayons, felt tipped pens, die-cut letters, or clippings from printed copy. This artwork, should be done in colors that are in strong contrast to the background shade—white on dark colors photograph better than pastels. A standard typewriter may be used to add written copy for the three inch stand format and a primary-faced typewriter can be used for the eight inch format.

The Visualmaker copystand can also be used to photograph some three dimensional objects. Such objects may cast a shadow toward the open end of the copystand, but pictures can be planned so the shadow does not interfere or so it enhances the effect. If you would prefer to minimize the shadow, try holding a piece of white typing paper just outside the picture area at the open end of the stand. By leaning it in at the top toward the camera, you can reflect some flashcube light back toward the shadow areas.

The Visualmaker is especially suited to photographing specimens—insects, leaves, rocks, soil samples, and cultures. It can also be used to photograph small artifacts, pieces of equipment, and even closeups of a process such as dissecting a frog. The eight inch stand has an amazing amount of focus tolerance. Nothing needs to be done differently if an object is less than one and one-half inches thick, but even objects two to three inches deep can be successfully photographed if the stand is positioned so that the normal focus plane cuts through the approximate middle of the object. A similar focus tolerance on the three inch stand is about one-half inch.

Figure 3. Using the small stand with a masking guide. (Be sure to remove masking guide before shooting the picture.)

The Visualmaker kit includes a "pistolgrip" handle for the eight inch stand to facilitate holding the stand in a vertical position when photographing such things as growing plants or tree bark. You must remember to use flash, however, when the camera is mounted on the copystand, even in sunlight.

If a picture or drawing is not big enough to fill the photographed area, it can be mounted on or framed with colored paper. Let's say you want to photograph a picture printed in a book which measures five and one-half inches by six and one-half inches. The use of the three inch stand would cut out too much of the wanted area and, of course, the eight inch stand would photograph unwanted items surrounding the picture. The solution is to select a pleasing color of construction paper and with a ruler and sharp knife, cut an opening slightly smaller than the picture (in this case about five inches by six inches). If you place the mask on top of the picture and under the legs of the copystand, a very satisfactory slide can be produced from the picture. Figure 4 illustrates this often encountered problem and Figure 5 shows its simple but attractive solution with a construction paper mask and tile letters.

Other Applications

The Visualmaker camera can easily be used off the copystand. Since it has an electric eye which makes outdoor light setting automatic, even elementary age

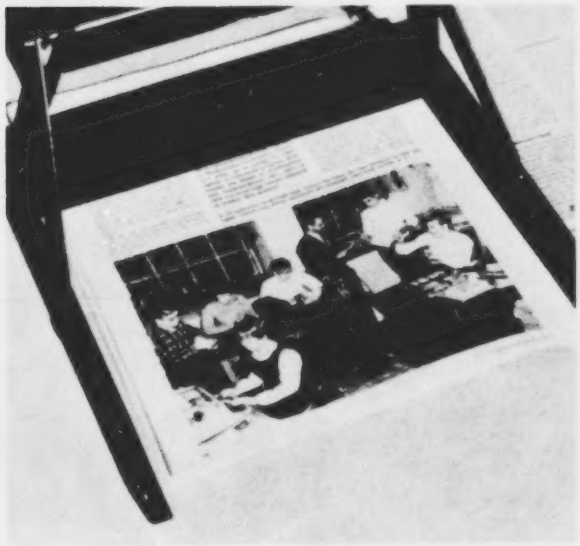

Figure 4. An undersized picture without a mask.

Figure 5. An undersized picture with appropriate mask.

students can use it with success. It should be noted that the electric eye is powered by a battery which must be in working condition. If your camera fails to indicate a need for flash on indoor pictures, you can suspect that the battery is either weak or corroded. If the camera is used indoors, a distance of twelve feet from the subject is maximum for a good flash exposed colored slide.

Slides made without the stand—people, machines, signs, buildings—can be combined with those made on the stand. Missing pictures in a slide set made on the scene can often be filled in by copying a flat picture from a book or magazine.

The ease of making slides with the Visualmaker opens many instructional possibilities. One application often overlooked is using slide sets to give demonstrations of how to do something, such as use a slide rule, thread a projector, put in a zipper, or clean a sparkplug. Such slide sets can prove invaluable to the teacher who uses a highly individualized or learning station approach.

This concept of a slide-sound set brings us full circle back to the cassette recorder. Hopefully, you have made a decision in the interim to begin harnessing up this communication team. A curriculum designed to meet the needs of our complex world requires both pictorial and verbal communication. No longer can we afford the inefficiency that has characterized our traditional efforts to *tell* the learner what we want him to *understand*.

MULTIPLE IMAGE SLIDES

DAVID M. JENKINS

If you want a more dynamic slide presentation, why not try making multiple-image slides. Using a slide copier, you can produce multiple-image slides in a standard 35mm format that can be projected from a single projector. All you need is a sheet of 3 ¼" x 4" glass (the type used for producing lantern slides is excellent), a roll of 3/16" opaque tape, and lots of good slides.

The following two procedures are designed for different effects. The first process gives you either two, three or four images on one slide. The second process will let you project multiple-image slides sequentially for comparison. For example, the first slide would show an image on the upper left quarter of the screen. The next slide would show the same picture on the upper left quarter plus another image on the upper right quarter. The next slide would show the first two pictures plus an image on the lower left quarter, and so on until as many as four pictures were on the screen at one time. This is a very effective method of showing information for comparison.

Two Images on One Slide

1) While two, three or four images can be produced on one slide, you may want to limit your first venture to two. Select two slides that you want to project simultaneously. Pick slides with the same format—either both horizontal or both vertical. Even though any combination will work, similar formats are easier to handle initially. (See Figure 1.)
2) Remove the slide mounts and place the two 35mm transparencies on the 3¼" x 4" piece of glass. Be sure both the glass and transparencies are free of dust and dirt—these will show up as specks on the finished slide. (See Figure 2.)
3) Secure the transparencies on the glass with tape. There are several brands of slide masking tape you can use. It is generally inexpensive and gives a clean, sharp edge to the image. If you are doing a number of multiple-image slides, I recommend buying tape in quantity since it goes surprisingly fast. (See Figure 3.)
4) Using the tape, mask out the remainder of exposed glass. (See Figure 4.)
5) Remove the plate on top of the slide copier and place the masked slides on the copy stage. Copy

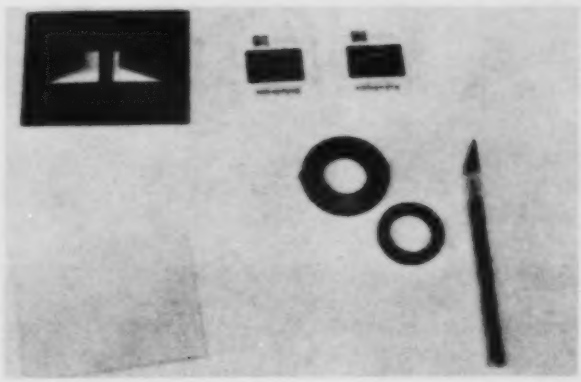

Figure 1

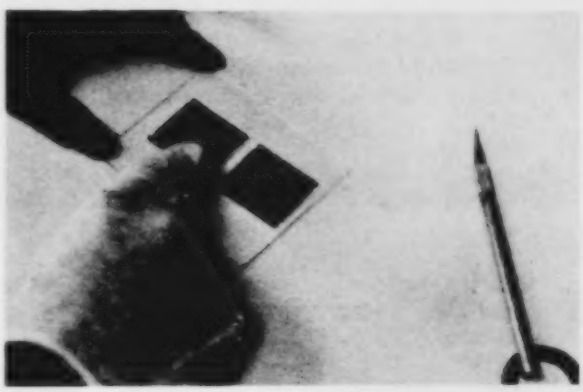

Figure 2

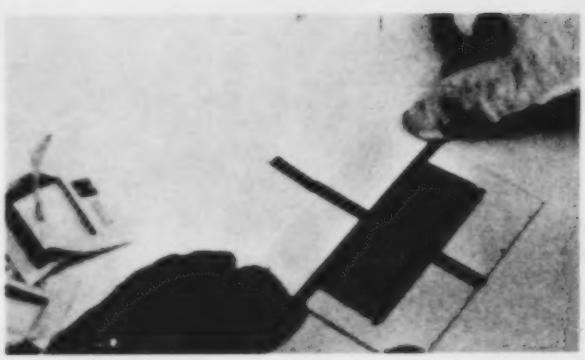

Figure 3

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the images just as you would normally copy a regular slide. During the first few attempts, you might want to experiment with several camera settings to compensate for one slide being slightly darker than the other. The best approach is to cover one slide and get a light reading on the other; then get a reading on the second slide with the first covered. Set the camera to a setting that falls between the two readings. (See Figure 5.)

Your finished product will be a single slide with two images on it. Once you've mastered this, you can then produce a single slide with two, three, or four images on it.

Multiple-Image Slides for Sequential Use

This process allows you to reveal different segments of the screen. It is done basically the same way as the process above, but with the aid of easily constructed black paper masks.

1) Construct black paper masks according to the format you want to use. (See Figure 6.)
2) Mount the slides with tape on the back of the mask in the order you want them to appear. (See Figures 7 and 8.)
3) Place the mask and the slides on the slide copier. Open the flap of the first image to be exposed, keeping the other flaps closed. Copy the first slide. (See Figure 9.)

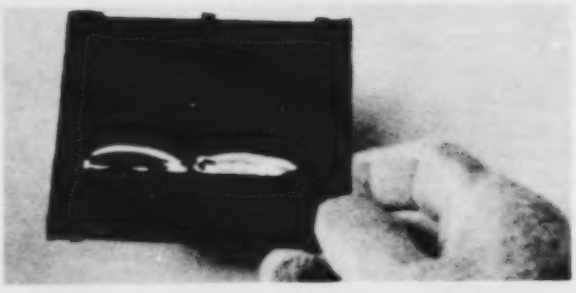

Figure 4

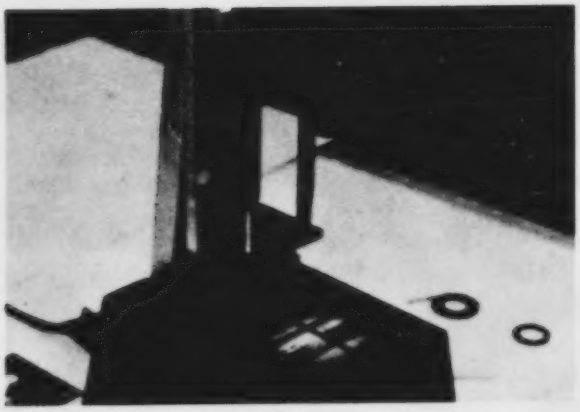

Figure 5

Figure 6

Figure 7

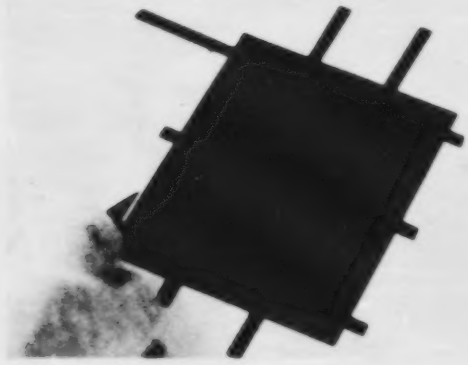

Figure 8

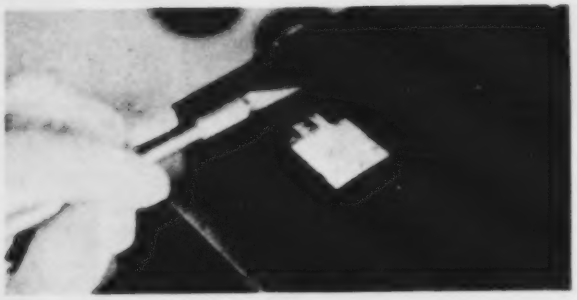

Figure 9

4) Advance the camera without moving the mount. Open the second flap along with the first and take the second slide. (See Figure 10.)

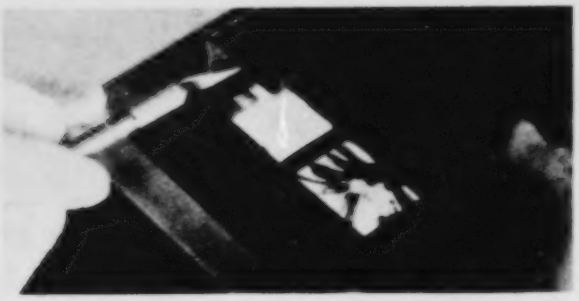

Figure 10

5) Repeat this process for all of the flaps on the mask.

You'll then have a series of slides you can show sequentially for comparison. This would be a good way, for example, to show growth charts for the last four years, revealing one consecutive year after another. Or in foreign language class, you could show a slide of the spelling of an English word and ask students to spell the word in the foreign language. After answering, the next slide can be exposed showing both the English word and the proper foreign spelling.

With a wide variety of slide combinations possible, a one projector, multiple-image slide presentation becomes financially feasible and exciting. Multiple-image slides can make your presentation livelier and more enjoyable.

7302 COULD BE THE ANSWER TO SOME OF YOUR TRANSPARENCY PRODUCTION NEEDS

PAUL E. NOVAK and PAULA NOVAK

Have you ever wanted a high quality overhead transparency from one of your favorite black and white 35mm negatives? Have you wished for a quick set of slides for a presentation? If you answered yes to either of these questions, your solution will be found through the use of Kodak 7302 fine grain positive film (a fine grain-negative-working material).

Overhead Transparency Process

This film is a tremendous medium to use for making overhead transparencies. Processing is a snap for anyone who can make black and white prints and the price per transparency is under a dollar. To make a 8'' x 10'' (20cm x 26cm) transparency, follow the steps listed below:

1. Pick out one of your negatives, place it in the enlarger.
2. Focus on the printing easel.
3. Get out a sheet of direct positive film using either an OA (yellow) or 1A (red) safelight. Put the film emulsion up on the easel and make the exposure. To determine exposure time, make a series of tests. This material is about ½ the speed of kedabromide grade 2.
4. Develop the film in a solution of one part Dektol to two parts water. The image comes up rapidly once the film is in the developing tray. The emulsion side, in fact, might appear to be almost black and overexposed. Develop with the emulsion side down and the results can easily be judged by observing the changes on the non-emulsion side. Normal developing time is about two to four minutes, contrast can be built up by using the longer developing time. The film will have a cloudy appearance after developing is completed.
5. Drain the film and put it in the stop bath for about 30 seconds.
6. Fix the film for about three to five minutes. You can judge total fixing time by observing the disappearance of the cloudiness. Once the film clears, fixing is about one-half completed. Continue fixing for a time equal to clearing time. Room lights can be turned on after one minute of fixing to judge the results of your efforts.
7. Wash the film in water for about five minutes.
8. Give the film a 30 second dip in a Photo-Flo solution and hang it up to dry.
9. Mount the transparency and it's ready for projection. If you want more protection for the emulsion side of the film, place a clear sheet of acetate over the emulsion side when mounting the transparency.

35mm Slide Process

A similar process can also be used to make 35mm slides from a set of 35mm black and white negatives. Instead of projecting the negatives in the enlarger, a contact sheet is made using the direct positive film. Start by selecting the negatives you wish to use and follow these steps:

1. Take out a 8'' x 10'' (20cm x 26cm) sheet of direct positive film, and place the negative strips on the film. Remember to keep emulsion to emulsion when making the contact sheet.
2. Place a sheet of glass on top to insure good contact.
3. Make an exposure using the enlarger as a light source.
4. Develop, stop, fix, wash, and dry the film.
5. Cut the film and mount the individual frames in cardboard or plastic mounts. Results—an almost instantly produced series of black and white slides.

Kodak 7302 direct positive fine grain is a very versatile and relatively low-cost photographic medium. Anyone possessing darkroom skills can easily learn to use this film to produce overhead transparencies. In addition, unprojectable negatives can be easily reversed for projection. The process is simple, quick and low-cost. Give direct positive film a try and see if it meets some of your transparency production needs.

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CHANGING THE IMAGE SHAPE OF 35MM SLIDES

DUANE E. HEDIN

As slide presentations are being more widely used in education, government, and industry, and as more multi-media or multi-image programs are being shown in conferences and conventions, it is not unusual to see 350 or 400 slides in one program. It has become apparent that something could, and perhaps should be done to break the monotony of seeing the familiar rectangular image of a 35mm format in every image area.

When two or more images appear on the screen or screens at once, it is a nice relief for the viewer to occasionally see a variety of shapes in the image areas. When used wisely it is not only pleasant, but can provide contrast and comparison. Variety and emotional involvement can also be created depending on the content of the slide and the shape of the mask.

About five years ago I devised a way of masking slides—the process is called High Contrast Slide Masking. It has been used in many multi-media productions and recently a growing number of people have adopted the idea, but continue to have many questions concerning "how to do it."

There are several reasons for masking slides which include, among others, covering unwanted material or background distractions such as lettering, advertisements, and other objectionable material so that only desired parts of the illustration show through the mask. Masks can also help to focus a viewer's attention to a specific area of the slide image. Thus, slide masking can have a tremendous visual message impact.

Where the mask itself is part of the content and lends support to the visual image, it assists in communicating the message. For example, a slide of a football game masked in a football instead of the well known rectangle not only focuses the viewer's attention on the action by blocking out some of the spectators in the slide, but the shape of the slide reinforces the message (see Figure 1). A beautiful fall scene masked in a leaf-shaped mask instead of the familiar rectangular format or a traffic accident masked in a broken windshield are other examples. (see *Figure 2, 3*).

There are several ways to mask a slide. Masking with high contrast film is a good one, not only because the masks are opaque and project a very sharp line, but because they can be used with existing or old slides.

To produce a mask, make a silhouette drawing with black india ink on white posterboard or drawing paper in the exact shape of the mask desired. Then photograph the drawing with high contrast ortho film to the exact size wanted. After processing the negative, the original black image will be the clear area on the negative through which the image is projected. When dry, cut it to the outside dimension of the colored slide and sandwich the negative with the slide into the 35mm mount.

Care should be taken to mount the mask behind the original film image (against the shiny backing of the film). If it is shown in an automatic focus projector, the image will be in focus instead of the mask. If for any reason the mask should be in sharper focus than the colored slide, then it should be mounted in front of the original slide (against the dull or emulsion side, toward the projection screen).

High contrast images can be saved over the years and combined in positive form onto sheets of 8" x 10" high contrast film or 35mm high contrast strips or rolls. When several masks are needed for a production, a contact negative can easily be made from these and the image to be sandwiched with the colored slide simply cut out. The positive sheet is then left intact to be used as a master for later masking needs. You'll find that masking makes multi-media easier to produce and more exciting for viewers.

FIGURE 1

FIGURE 2

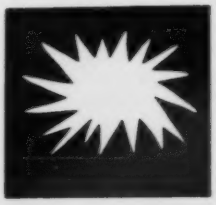

FIGURE 3

[1] Association for Educational Communications and Technology, 1980. Reprinted from *Audiovisual Instruction*, November 1975.

3

HOW TO MAKE TITLE SLIDES

MAKING TITLE SLIDES

DEANE W. HUTTON AND JEAN ANNE LESCOHIER

Of all the audiovisual aids to instruction available to the classroom teacher, color slides offer several unique advantages. Most teachers own a camera—whether it be a Kodak Instamatic or a Nikon—and color slides are relatively easy to present in both group and individual instruction situations. And to make a good set of home-made slides look truly professional, it is easy to add title slides. Title slides are not only useful for introducing the material, but also for dividing into sections and for making summaries. So titles can be important for practical as well as aesthetic reasons.

There are, of course, many different kinds of title slides. In fact, probably the simplest way to obtain verbal material on slides is to photograph "natural" signs—billboards, signposts, store marquees. But the signs you want are not always available. To make a title say exactly what you want, the surest thing is to write out the words and photograph them. For those of us who cannot hand letter neatly, there are many alternatives. There are cutout letters, press-on letters and mechanical lettering devices such as Wrico guides and Leroy guides and Varityper machines. Once the lettering is completed or pasted-up, it is relatively easy to photograph, particularly if the slide-maker has access to close-up rings or lenses. However, the resulting title slide with a bare verbal message may be a little dry. Its effectiveness can often be enhanced by combining the verbal message with a related photographic scene. How can title words be superimposed over scenes? The answer to this question is the purpose of this article.

Many methods are available for superimposing words over a photographic scene. We will examine four in some detail, describing equipment and procedures, and indicating advantages and disadvantages of each method. The following diagram sets out the four methods of image manipulation and combination in order of increasingly complexity and versatility:

Method 1:
CAMERA DOUBLE-EXPOSURE
Over-rides double-exposure prevention mechanism in 35mm camera.

Method 2:
SANDWICH SLIDE
Combines separate frames in single mount.

Method 3:
SLIDE DUPLICATOR
(e.g. Repronar)
Combines electronic flash, to illuminate slides, with built-in double-exposure facility.

Method 4:
DIAZO COMBINATION
Convert title slide and color slide to diazo positives and combine with methods 2 or 3.

As might be expected, methods which are more sophisticated and versatile also cost more in time and money.

Method 1:
CAMERA DOUBLE-EXPOSURE
Over-rides double-exposure prevention mechanism in 35mm camera.

Modern 35mm cameras usually have automatic double-exposure prevention mechanisms. However, in most cases the mechanism can be over-ridden. (This method will not be applicable to most cameras that use a rewind *switch* rather than a rewind *button*. e.g. Nikon F)

Take	the first picture (e.g. a scene), keeping in mind where the title words will be placed.
Don't advance	the film!
Tighten	the film in the camera by turning the rewind lever.
Hold	the rewind lever firmly, *press* the rewind button and *flip* the advance lever one complete turn. This will cock the shutter ready for the next exposure without advancing the film—so that the next frame will be superimposed over the last.
Photograph	the title words.
Warning	Use white or light colored lettering on a black background.

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Method 2:
SANDWICH SLIDE
Combines separate frames in single mount.

Photograph	the scene and title words separately. In this case the lettering should be black or a dark color on a light background. Also, the scene should have a light area which corresponds to the position of the words on the title slide.
Remove	each slide from its mount.
Fix	them together with small pieces of adhesive tape over the sprocket-hole edges.
Re-mount	the "slide sandwich" in a fresh mount.

Method 3:
SLIDE DUPLICATOR
(e.g. Repronar)
Combines electronic flash, to illuminate slides, with built-in double-exposure facility.

The Repronar can be used for making ordinary slide copies, for adjusting exposure, for cropping the original image, and for making several kinds of title slide. We will describe its use in superimposing white or light-colored lettering over a dark image area.

Make	a title slide on high contrast film (e.g. Kodalith) with clear lettering on black background.
Place	scene slide on the ground glass of the Repronar.
Switch	on viewing light, focus the image, set f stop according to the calculator.
Switch	light from "view" to "flash" position.
Press	shutter-release button, wind the film.
Do not Cock	shutter by pressing the plunger at back of camera.
Replace	scene slide with title slide.
Press	shutter-release button again to make the second exposure.
Advance	the film.

To make a title slide with colored letters, repeat the above procedure but place a colored filter (e.g. cellophane, gelatin or diazo film) in contact with the title slide when it is copied. Use light colors, and make sure the letters are superimposed over a dark area of the scene.

Method 4:
DIAZO COMBINATION
Convert title slide and color slide to diazo positives and combine with methods 2 or 3.

The diazo process can be used for creating a continuous-tone positive monochrome image from a color slide. There are many ways to combining this positive with the title. Here we outline the method for making a two-color diazo title slide.

Remove	the color slide from the mount.
Place	slide on contact with colored diazo film.
Expose	diazo-slide combination to ultraviolet light.

Do not develop at this stage! You now have a latent positive diazo scene.

Make	a Kodalith positive title slide from the Kodalith negative.
Place	Kodalith positive in contact with diazo film of a second color.
Expose	to ultraviolet light.
Develop	in ammonia. You now have a diazo positive title.
Sandwich	latent diazo scene with Kodalith negative title.
Expose	the sandwich to ultraviolet light so that title "burns" into the scene as clear letters.
Develop	in ammonia. You now have a diazo monochrome scene with clear letters.
Combine	diazo title scene with diazo title. The colored letters will show through the clear letters. These two can be combined by the Sandwich Slide or Repronar.

This is one of the more complex diazo combinations. Simpler methods can be worked out from this outline.

We have outlined four methods for superimposing words over scenes to make title slides. Refer to Table 1 which outlines the advantages, disadvantages and suggested use of each method.

(over for Table 1)

TABLE 1

METHOD	ADVANTAGES	DISADVANTAGES	SUGGESTED USE
1 Double Exposure	Quick. No special equipment needed.	Cannot preview the superimposition. Initial exposures must be correct. Must use light lettering.	For making superimposed title slides when camera is only equipment available.
2 Sandwich	Quick. No special equipment needed.	Original slide incorporated into sandwich. Must use dark letters on light background.	To make titles that are needed in a hurry, using pre-existing color slides.
3 Repronar	Quick. Excellent control over relative sizes of picture and lettering.	Equipment expensive (several models, $200 up). Cannot preview the superimposition.	For mass production of title slides.
4 Diazo Process	Variety of effects possible. Flexible.	Time-consuming. Requires considerable skill and practice.	Effective for producing title slides with unusual color combinations.

HOW TO MAKE TITLE SLIDES WITH HIGH CONTRAST FILM

DEANE K. DAYTON

Photographers, educators and others often combine color slides into a single presentation to communicate better visually. Such presentations can be greatly enhanced by including attractive title slides or by superimposing captions, labels, etc., over existing slides. The need, therefore, arises for a simple and inexpensive system to make title slides. The purpose of this article is to describe such a system—one which is very flexible, but still meets the requirements of low cost and ease of use.

Locating Materials

The key to this system of making title slides is a high contrast film manufactured by the Eastman Kodak Company called "Kodalith Ortho Film, Type 3." This is an orthochromatic film which has long been used by offset printers and graphic artists. When properly exposed and developed, it results in excellent reproductions, yielding solid blacks, exceptionally clean whites, and no middle gray tones.

Kodalith is available in 35mm, as well as many other formats. The 35mm film (Kodak film type 6556), however, comes in 100 foot rolls (approximately $10) and must be repackaged into cartridges by the user. Such repackaging can either be done with a bulk loader or in a darkroom. Individuals desiring to produce large quantities of positive high contrast slides may also want to purchase a box of 8 × 10 sheet film (Kodalith film type 2556—approximately $20 for 50 sheets) since it simplifies the process of making contact prints.

Kodalith can be developed in any of the following: Kodalith Super RT Developer, Kodalith Developer, Kodalith Fine-Line Developer, or Kodalith Liquid Developer. To prolong their life, the developers are sold as two separate solutions, A and B, which are mixed in small quantities just prior to use.

Kodalith films and developers are not considered to be amateur products and are sometimes hard to locate. They are, however, stocked in some of the larger photography shops. Shops that do not have them in stock can often order them or can refer you to another store. Shops that advertise Kodak Graphic Arts Supplies should have the products readily available. As a last resort, you can write to the Eastman Kodak Company (343 State Street, Rochester, New York 14650) for the address of the nearest distributor.

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The rest of the supplies (see the Required Materials list) can be found in photography, drug, grocery, or art supply stores. The required equipment should be readily available in even the simplest of darkrooms capable of handling 35mm film. The one modification to the darkroom, which is well worth the effort, is the installation of a red safelight (Kodak Safelight Filter No. 1A, or similar substitute) if one is not already there. Red light, unlike other colors, will not expose the ortho film and therefore eliminates the necessity of working in total darkness.

Preparing the Artwork

Techniques for producing the artwork for the slides are plentiful, and in most cases quite simple. The only major requirement is that the artwork be high contrast, consisting of a dark (preferably black, and definitely not blue) image on a light (preferably white) background. A black india ink or felt-tip pen drawing on white paper makes an excellent original. Illustrations can be made freehand, or can be composite pictures pasted together from a variety of sources, such as high contrast magazine illustrations or commercially prepared clip art. As long as all of the illustrations are on white paper and are adhered well to a white background, the paste-up marks should not show when photographed.

Lettering, too, may be freehand, or you may want to try a commercially produced system. There are a variety of mechanical systems available—LeRoy, Letterguide, Unitech, etc.—which produce professional appearing lettering using india ink, templates and a scriber. These systems do, however, require a sizable initial investment which the small-time producer may not be able to afford. An excellent substitute can be found in transfer type—Presstype, Chartpac, Format, etc.—which can be purchased by the sheet ($1 to $4 per sheet) in art supply stores. These letters come in a wide variety of interesting styles and sizes and are easily applied to the artwork.

A few precautions before preparing the artwork will prevent occurence of two common mistakes. The first has to do with the size of the artwork and the limitations of the equipment with which you plan to photograph the artwork. If you have a macro lens, or a series of close-up filters, for your single lens reflex camera, you need not worry much. However, if you do not have these items, be certain that the artwork is large enough to be in focus when it fills the viewfinder of your camera.

Second, since the artwork is to be copied onto a 35mm slide, it is important that it be prepared in a suitable format (see Figure 1). When a 35mm slide is in

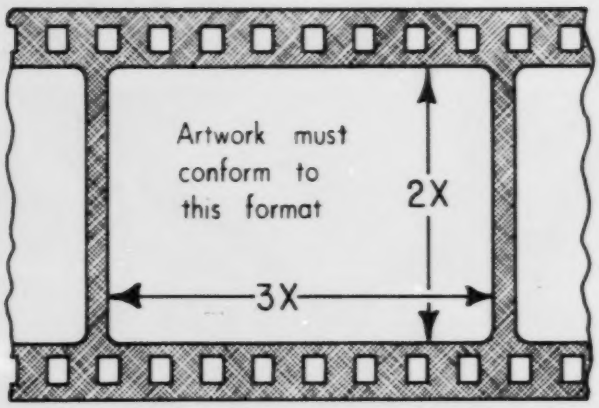


Figure 1

a horizontal position, the ratio of the image height to the image width is approximately 2 to 3. This means that the prepared artwork must also fit within this ratio if it is to have a pleasing appearance. For example, if the width of the finished artwork is 12 inches, its height must be two-thirds of that distance, or eight inches. Prior to beginning the artwork, it is a wise practice to estimate its approximate size and then draw a properly proportioned format rectangle directly on the drawing paper with a light blue pencil. The artwork can then be composed within this rectangle. The light blue pencil marks will not show up when the artwork is photographed with the Kodalith film.

Photocopying the Artwork

To eliminate the problem of parallax, a single lens reflex camera should be used to copy the artwork. If a copystand is available, the camera should be rigidly mounted to the camera support, making certain that the back of the camera is parallel to the base of the copystand. The artwork is then placed on this base. If it has a tendency to curl, a clean sheet of glass may be used to hold it flat. Photographic lights with reflectors should be placed at either side of the copystand and aimed down at an angle of approximately 45° from horizontal so that they evenly illuminate the artwork surface (see Figure 2). A cable release should be used on the camera to eliminate the possibility of movement during the exposure.

In the event a copystand is unavailable, a tripod can be used to support the camera. In this case the artwork must be secured to the wall and the camera positioned as shown in Figure 3. If two photographic lights with reflectors cannot be located, any source of light (other than red) can be used. If this is done, make sure that the artwork is *evenly* illuminated.

Kodalith has an ASA of 6, but I find the value to be somewhat unreliable due to the narrow latitude of the film and differences in light sources, developer temperatures, manufacturers specifications, etc. For that reason, it's a good idea to shoot a test roll prior to copying a large quantity of material. Since the film must be bulk loaded, it's a simple matter to load a short roll (ten to 15 exposures) into the camera, set the shutter speed at one second, and make several exposures at one-half stop intervals throughout the aperture scale, recording the aperture setting for each shot. The artwork used for these test exposures should be of a medium size and rather complex in order to provide the best estimate of the correct exposure.

Once the film has been developed, following the manufacturer's specifications, the best exposure can be selected and its aperture determined by referring to the notes taken while shooting. A properly exposed negative should preserve all of the fine detail, as well as have clear, transparent whites and solid blacks which are free of pinholes. As long as no conditions change (light position, developer temperature, etc.) an aperture selected in this manner should provide adequate exposures for the rest of the artwork. However, it is a good precaution to bracket all exposures by shooting each piece of artwork at an aperture one stop greater and one stop less than the selected exposure. This practice of shooting in threes often eliminates the need to reshoot some of the slides and is considered to be well worth the additional cost in materials.

The film can be developed under a red safelight in either a roll film tank or a tray. The use of a tray permits development by inspection in the event a test roll was not shot. However, the use of a film tank probably results in more even development of roll film. Developer is prepared just prior to use by mixing equal portions of the two solutions. Development times and temperatures for the various developers can be found on the data sheet packed with the film. Except for the type and use of the developer, the process is identical to the development of any other roll of 35mm black and

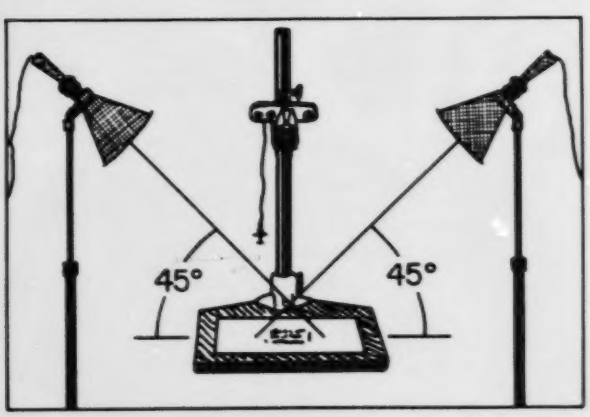
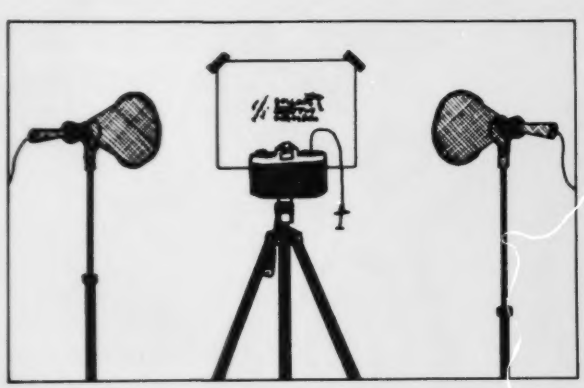


Figure 2



Photographing with a tripod

REQUIRED MATERIALS

This is a list of all of the materials required to complete all of the processes described in this article. If the reader intends to try only some of the processes, many of the materials listed will not be needed. In such a case, the text of the article should be consulted before any purchases are made.

Supplies

Kodalith Ortho Film, Type 3
- 35 mm, type 6556 (100 foot roll)
- 8" X 10" sheet film, type 2556

developer (one of the following)
- Kodalith Developer
- Kodalith Super RT Developer
- Kodalith Fine-Line Developer
- Kodalith Liquid Developer

stop bath
fixer
photographic paper
black and white, continuous tone film
drawing paper
india ink
slide mounts
negative opaque
cotton swabs
watercolors (one of the following)
- foodcoloring
- Dr. PH. Martin's Synchromatic Transparent Watercolors

acetic acid (stop bath or vinegar)
spirits of ammonia
rubber cement
colored mimeograph ink
clean newsprint
masking tape

Equipment

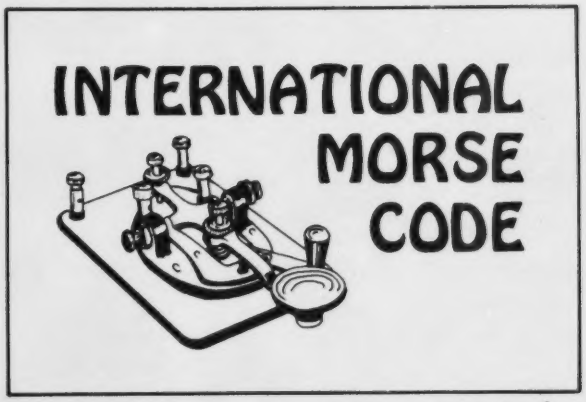
35 mm single lens reflex camera
copystand or tripod
lights with reflectors (2)
cable release
film cartridge
bulk film loader
darkroom
red safelight (Kodak Filter No. 1A)
film developing tank with reel
developing trays (3)
enlarger (or other light source)
glass plate
squeegee
cotton glove
drawing instruments
a lettering system (one of the following)
- a mechanical lettering system (LeRoy, Letterguide, etc.)
- sheets of transfer letters (Formatt, Chartex, Presstype, etc.)

ruler
light blue pencil
projector
small brush
bottles for mixing colors

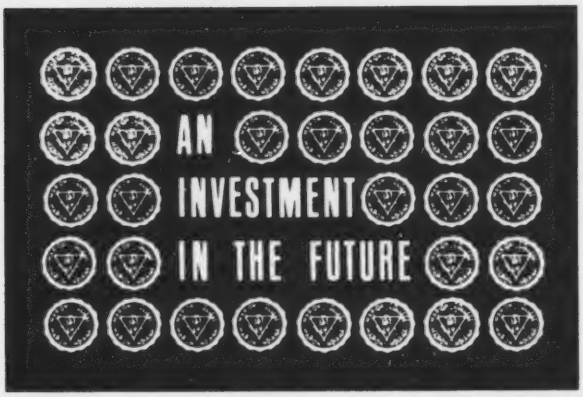
white film. The novice can find an adequate description of the development process on the film data sheet.

If a negative slide is acceptable (white lettering or artwork on black background), it's a simple matter to select the best exposure of each slide once the film is dry. Cut the negative of this exposure and secure it in a mount available at most photography stores. If a positive slide is desired (black artwork or lettering on white background), the negatives can be contact printed, emulsion to emulsion, onto another strip of roll film or onto a sheet of Kodalith film, type 2556. Then develop the film and mount the negatives in the same manner as described above. If you are unfamiliar with the process of making contact print, you can find an explanation in any basic photography book.

Occasionally, slides prepared in this manner have pinholes or other imperfections in the black areas, due to improper development or dirt somewhere in the system. These imperfections can be removed with negative opaque, available at photography stores. Opaque is simply a very dark paint which will block the passage of light. It can be applied directly to the slide with a brush. This material, however, should be used only on a dry slide and as the last step before contact printing or mounting.



A positive high contrast slide



A negative high contrast slide.

Most high contrast films see either black or white and no shades of gray. It is, therefore, sometimes difficult to determine the correct exposure because it is affected by the quality and contrasts of the original. To determine the optimum exposure for your standard set up, use a gray scale (Kodak Graphic Arts) for a series of exposures. After development, read the negatives for what's called the "dirty thirty." All values to the dark side of .30 on the gray scale are black (clear on the negative). All values to the light side are white (opaque on the negative). That leaves .30 a confused gray or "dirty." Exposure is now optimized for best contrast.
—Ed.

Part II

Although Kodalith Ortho Film is black and white, one or more colors can easily be added to the slides to enhance their beauty. One of the major ingredients of photographic emulsion is the gelatin-like substance which holds the silver particles in suspension on the film. Watercolor can be used to tint this gelatin coating, just like food-coloring (a watercolor) is used to tint gelatin salads or desserts.

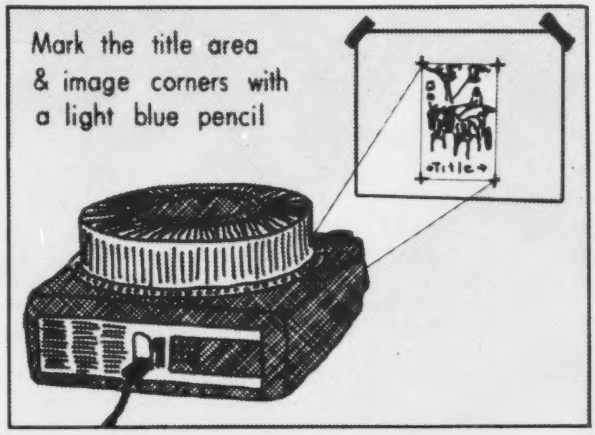
A Watercolored Positive

There are two good sources for watercolors. Food-coloring, available at the grocery store, comes in four basic colors and can be diluted and combined to create almost any other color. However, if consistency of color is required, it might be wise to purchase some bottles of Dr. PH. Martin's Synchromatic Transparent Watercolors, available through art supply stores. The bottles come in sizes as small as one-half ounce or as large as one quart, and in a wide range of colors.

If a single color is to be added to a high contrast slide, the best result will be obtained by dipping the dry piece of film into a tray of watercolor. Experimentation with pieces of scrap film is recommended, since many colors will need to be diluted to prevent them from being too intense for good projection. To increase the permanency of the color, a small quantity of acetic acid (stop bath or vinegar) can be added to the diluted watercolor. To ensure even saturation and to prevent spotting, the film should be immersed in a tray for two or three minutes and then either squeegeed or blotted quickly with clean newsprint before being hung up to dry.

If two or more colors are to be applied to the same slide, they are best applied with a cotton swab rather than in a tray. This procedure is particularly effective with negative slides which have patches of color surrounded by large regions of black. Such negatives reduce the precision required to apply the color by masking the uneven edges of the color.

Since both the emulsion and base sides of the film



are coated with a gelatin-like substance, color can be applied to either side. The emulsion coating (the dull side), however, is much thicker and will result in a darker shade. To ensure even saturation, color applied with a cotton swab should be permitted to stand on the surface of the film without drying for at least two minutes before being blotted off with clean newsprint.

If you have a difficult time preventing the colors from running into adjoining areas, a rubber cement solution can be used as a mask. The masking material is made by mixing rubber cement with a little colored mimeograph ink to make it more visible. Using a small brush, this can then be applied to those areas of the side that are not to be colored since areas coated this way will not accept watercolor. After a color has been applied, the rubber cement can be removed by gently rubbing it off with a finger. Since the rubber cement will not affect the watercolors once they have been applied, the process can be repeated for each additional color.

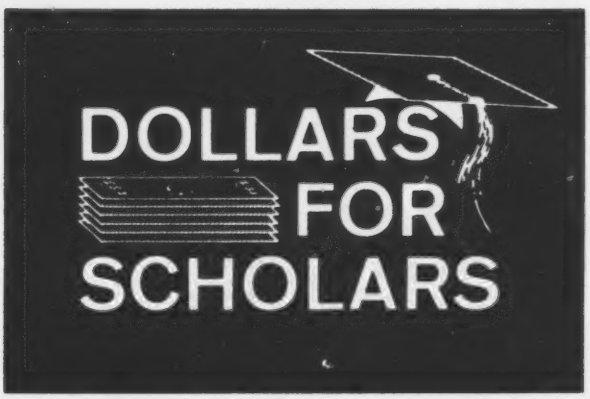
Mistakes in coloring can usually be corrected by washing the film in running water in the same manner in which it was washed during the development process. This procedure, however, requires redrying of the film and removes all of the color. Minor mistakes can be corrected with spirits of ammonia, available in most drug stores. Like watercolors, spirits of ammonia can be applied with a cotton swab. Once the ammonia has been liberally absorbed into the surface of the film, it will remove watercolors.

Superimposing Titles Over Existing Slides

Attractive effects can be achieved by superimposing high contrast, positive slides over continuous tone, color slides. The result is very similar to that often seen in motion picture titles. The artwork for a superimposed title is prepared as previously described, except that it must be planned with the color slide in mind. A good practice is to project the slide onto a piece of drawing paper. Then, indicate on the paper with a light blue pencil the area where the title is to appear. Superimposed titles are most legible on light colored areas with little or no detail. Before turning off the projector, be sure to indicate on the paper where the corners of the slide fall, so that the two images can be registered later.

After you are finished with the projector, add the title to the indicated area, using one of the recommended lettering systems. A blue pencil and ruler can be used to connect the corner marks, thereby indicating the edges of the frame in the finished slide. Once the artwork is completed, photograph it, making certain that the edges of the camera viewfinder coincide with the frame edges which are drawn on the artwork. Develop the film and contact print it, emulsion to emulsion, onto another sheet of film. The resulting positive should then be developed and trimmed to size in preparation for mounting.

If the color slide is inserted in a plastic mount, it is a simple process to pry the edges of the mount apart and slide the film out. This should, of course, be done with a cotton glove to prevent fingerprinting the slide. The positive high contrast slide is then positioned, emulsion to emulsion, on top of the color slide and the two inserted back into the mount. If the color slide came in a cardboard mount, the original mount will probably have to be destroyed and the two remounted in either another cardboard or a plastic mount.



A watercolored negative slide.

A title superimposed over an existing slide.

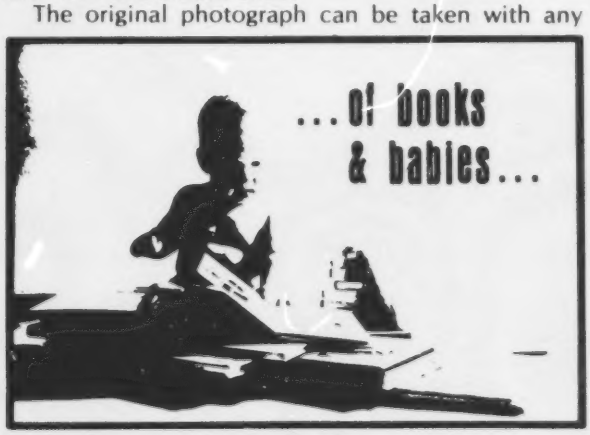
The process of contact printing emulsion to emulsion results in a high contrast positive and a color slide which are correctly oriented when the two are placed emulsion to emulsion. This is important, since it places the two photographic images, for all practical purposes, in the same focal plane. Separation of the two emulsions, even by a short distance, might result in the lack of proper focus for one of the two images when the slide is projected on a screen. Occasionally, the heat from the projector or the characteristics of the film may cause the two pieces of film to separate and result in the same problem. This, however, can be eliminated by mounting the slides in glass mounts which will hold the two pieces of film tightly together.

Posterized Slides

Posterization is a process by which continuous tone pictures are converted to high contrast by eliminating all of the intermediate gray tones. The effect is easily achieved with Kodalith film and often results in very dramatic and artistic slides.

The original photograph can be taken with any

A watercolored positive slide.



A posterized title slide.

black and white film, such as Plus-X or Tri-X. Posterization is usually most attractive if the original print contains many dark shadows which reveal the form of the object in the photograph. Such an effect can be created by using a single light source to one side of the object. The print can be made on any nontextured photographic paper. If the negative is of low contrast, an effort should be made during the printing process to heighten the contrast by whatever means possible. Transfer type can be used to superimpose titles over the light areas of the finished print.

The posterization is accomplished by rephotographing the print with Kodalith Ortho Film. Depending upon the desired effect, the high contrast negative, or a positive made by contact printing, can be used for the slide. Watercolors can, of course, be added to make the slide more attractive.

Conclusion

Individuals interested in the preparation of visual materials that contain a message will discover that high contrast film can greatly expand the sometimes limited potential of continuous tone photography. This article has only briefly described one use of high contrast film—the preparation of title slides. However, serious experimentation with this process can lead you to a broad range of other uses.

ADDING IMPACT TO 35MM SLIDES

NEAL HALL

It seems as though everyone who works preparing visual presentations has some favorite "trick" for doing 35mm slides. Adding interesting visuals is a plus for any presentation. We all know that "words" on a screen have about as much visual impact as the inside of a lens cover, but now and then there seems to be no way around showing just words. To add impact, many systems exist: color backgrounds; burn-ins over other scenes; high-contrast negatives or positives colored with tape, gel, or food coloring; and many other ways much more exotic.

Most of these methods take time and effort. Sometimes it's easiest to photograph on color reversal film and have the processing done by a commercial processor.

Here is a method that allows the simplicity of "push the button and leave the rest to the drug store" with more visual impact than standard color reversal slides usually offer. Using this system, black type will be projected as white. Black type is usually easiest to set—on typewriter, headliner, or by using press type. But, white type generally looks best on the screen because it is lighter than its surroundings—it stands out and gives more impact to the words. This system gives colored backgrounds with fully saturated, vivid, transparent color. The method involves a chemical mismatch between film and processing. The film used is Kodak Ektachrome X—a reversal type slide film; but instead of processing into slides via its normal chemistry—it's processed in color negative chemistry. This gives a color negative, where black equals white and colors are produced as their complement. Since the orange colored masking present in most color negative materials is not present in Ektachrome X, the color complements are rendered quite pure.

Color can be added to the original copy in a number of ways—colored paper, color filters over the camera lens, or colored gel over the light source; but remember, what you see is the opposite of what you get. You can get some idea of the final color reproduction by drawing a color wheel. Start with a circle (clock face). Write in red at 2 o'clock, green at 6 o'clock, and blue at 10 o'clock. Add the complements—yellow at 4 o'clock, cyan (blue-green) at 8 and magenta (blue-red) at 12. Now you have a graphic representation to show input versus output. Color on the final slide will be directly across from (180° away) the color on the original. It can be found that yellow paper will photograph as blue, light red or pink as green, etc.

Exposure will take some experimentation—Ektachrome X carries an ASA of 64, but this system will increase the effective ASA to about 400. Proper exposure is achieved when the whites are clear and open. Since color balance is relatively unimportant in this system, there's no need to worry about the color temperature of the light sources.

After exposure, mark the film magazine "process C-22" and have it processed. Tell the lab to *process* only (otherwise you'll get prints also), and it might be wise to buy some 35mm mounting frames—commercial processors normally don't mount color negatives; however, some will if asked.

This process will yield 35mm slides that are visually interesting because of the vivid and unusual colors, and the reversed type makes for a much snappier screen image.

Editor's Note: Some commercial processors are using a new process—"C-41" instead of C-22. C-41 is a 100 degree process, and might be a little hot for Ektachrome X. Check that your processor is in fact using C-22 before you send the film.

* Association for Educational Communications and Technology, 1980. Reprinted from *Audiovisual Instruction*, November 1975.

MAKE PERFECT SLIDE CAPTIONS EVERY TIME

MARIE E. COLLART
BETH L. WISMAR

Printed slides over background illustrations add interest and emphasis to program introductions, modular dividers, credits, or summary sections. The letters are dominant, and the pictorial material is secondary. The reverse—dominant illustration and secondary letters—is also frequently desired in auto-tutorial programs. In this case, the letters, circles, pointers, or arrows are used to direct the viewer's attention and clarify observation. Some of the slide-titling techniques that have appeared recently in the literature are referenced here.

By simply sandwiching an acetate sheet containing dry transfer letters with slide transparency film, it is possible to produce color or black-and-white slides with the letters over background illustrations in a way that does not require photographing the letters. This method additionally allows positioning of the letters exactly where desired in relation to the illustration. The results are immediately observable and can, if necessary, be altered quickly and easily. It is possible to re-use either the pictorial or verbal component separately. This method also has the flexibility of using multi-color lettering. It is well suited to both 3" x 4" and 35mm slides.

The techniques using pictorial material as background require preplanning of the illustration in order to position the title and image in good and purposeful alignment. The major advantage of this method is that letters can be positioned over an illustration and later adjusted to complement it.

The following supplies are needed: a sheet of thin acetate like that used for overhead transparencies, dry transfer letters, double glass slide binders, cotton tip swabs, fine forceps, scissors, slide film cleaner, sharp point scriber, burnishing tool, and soft camera brush. To facilitate the rapid accurate placement of letters, a permanent alignment grid should be made by scribing a 2" x 2" area on a sheet of heavy acetate with a series of horizontal and vertical lines. The lines should be spaced appropriately to the size lettering being used, with a pointed instrument and a straight edge. The lines can be made more visible by wiping the acetate sheet with black drawing ink to fill in the lines.

Making the Sandwich

1. Secure the fine-lined grid to the light board with tape (see Figure 1).
2. Remove the film from the cardboard mount and position it over the grid, using the grid to approximate the length and spacing of the letters. Once desired spacing for the letters has been approximated, place the film aside in a clean area.
3. Secure a square of acetate at least ½" larger than the film over the grid with a small piece of masking tape at either edge (see Figure 2). The thinner the acetate, the better the critical focus of the finished slide.
4. Use the burnishing tool to adhere the dry transfer letters to the acetate, using the grid as a guide. If a mistake is made, letters can be lifted with transparent tape and the area cleaned with a cotton swab. When you are satisfied with the placement of the letter, place a piece of onionskin or other cover paper over the letter and carefully burnish it down (see Figure 3). Warning: excess pressure in burnishing will cause the letters to appear fuzzy when projected.

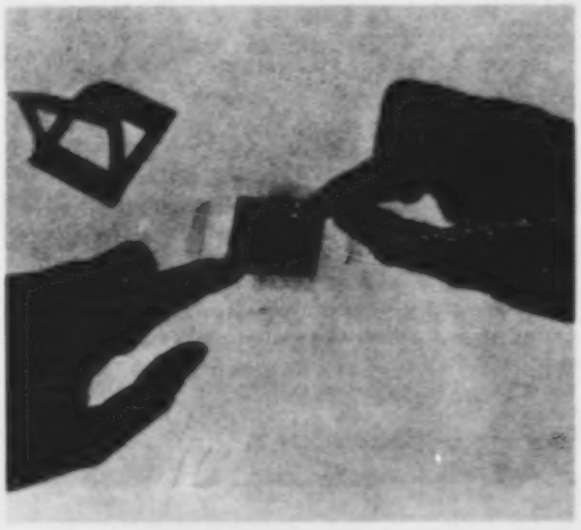


Figure 1

5. Gently clean any particles of adhesive remaining around the letters with a swab moistened in slide film cleaner (see Figure 4).
6. Place the film onto a light box with the emulsion

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Figure 2

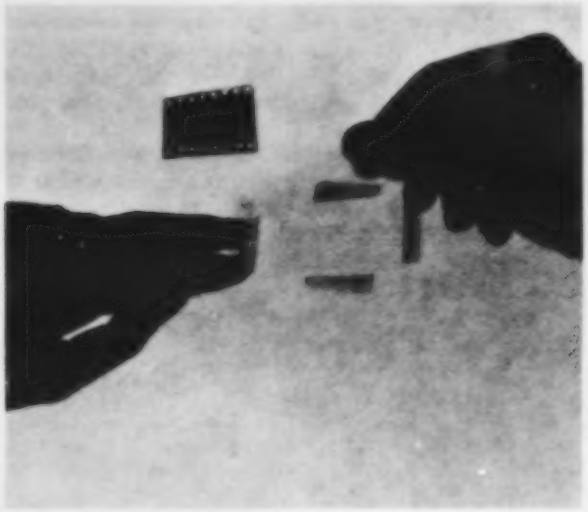


Figure 3

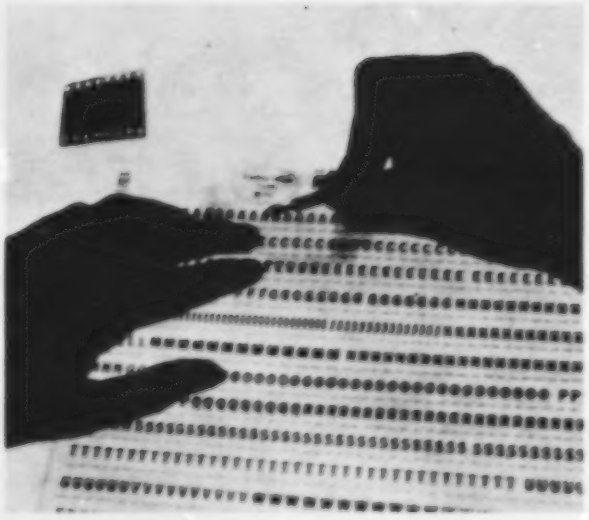


Figure 4

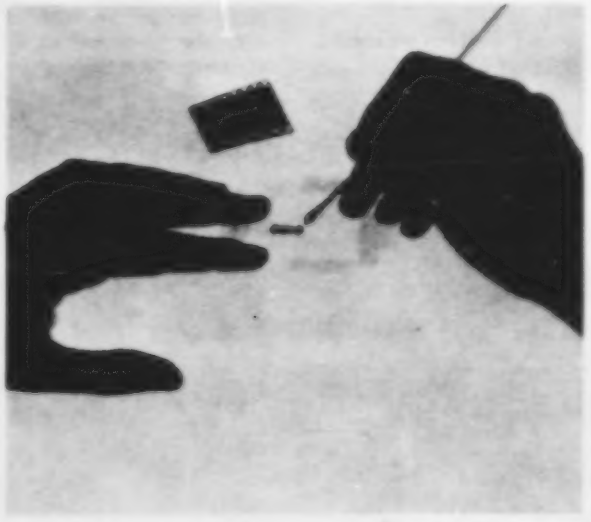


Figure 5

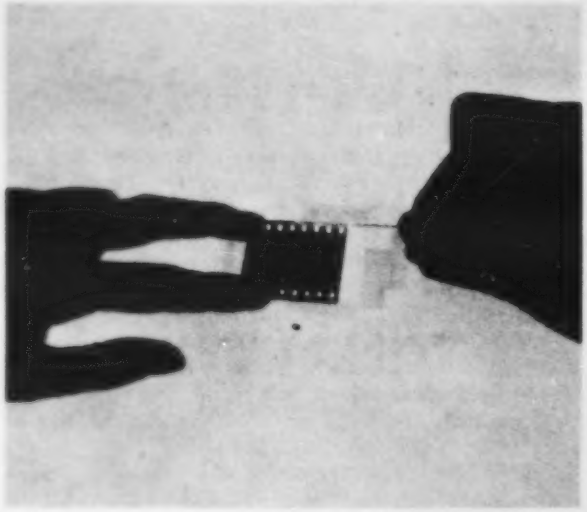


Figure 6

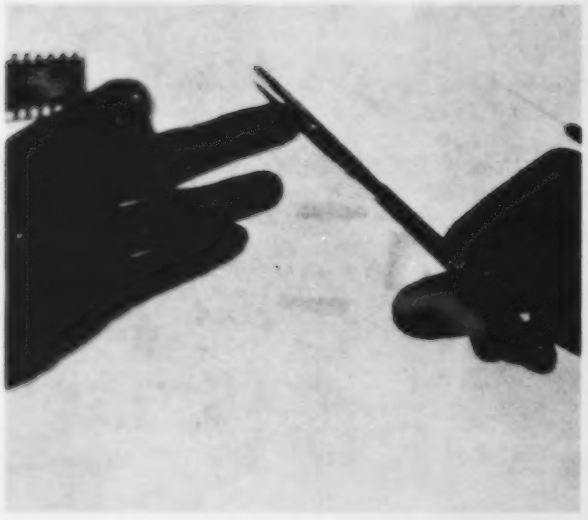
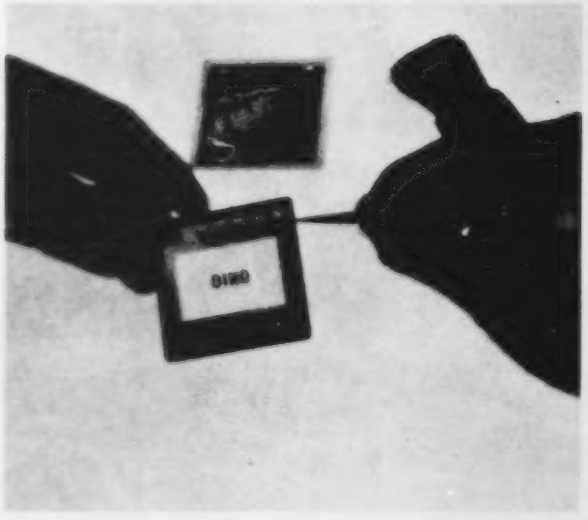


Figure 7



slide down, and align the acetate over the film so that the letters are positioned exactly as desired.

7. Mark the four corners of the film by making a small scratch in the acetate with a sharp pointed instrument or scriber (see Figure 5).

8. Cut the acetate to the film size, following the scratch marks. Handle the acetate carefully to avoid scratches on the visible surfaces (see Figure 6).

9. The acetate and film are now ready to be mounted. Use forceps to mount the film in the glass mount, with *the emulsion side to the glass*. Mount the acetate into the second half of the glass mount with *the letters toward* the glass (see Figure 7). Lightly press the two halves of the glass mount together.

10. Project the new slide to check for positioning, clarity of print, and absence of dirt. If adjustments are needed, open the mount, reposition, and clean with a soft camera brush. Once satisfied, tightly snap the two halves of the glass mount together.

The finished slide is now ready for immediate use in a universal slide tray. Due to the thickness of the glass mount, duplication of the slide is necessary if it is to be used in a 140-slide tray. It is possible at any time to open the original mount to separate the acetate and film.

If the method is to be used with 3" x 4" lantern slides, the technique is the same except that the film and acetate should be cut slightly smaller than the slide glass and fastened to it with mylar "silver" slide-binding tape. If the transparency will not be dismounted for future use, or if highly critical focus is essential, one can burnish dry transfer letters directly onto the film. With this method, however, one risks damaging and scratching the film.

If exact register of pointers or lead line is essential, the film can be mounted in glass first. The labels are then burnished onto the outside of the glass. If the thinnest possible glass mounts are used, the labels will be only slightly blurred. Sharper rendition can be achieved by duplicating the slides, focusing on the emulsion and not on the labels. The originals produced by this method must be treated with extreme care to prevent damaging the letters, which are fully exposed.

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HOW TO PRODUCE TITLE SLIDES IN A HURRY

JOHN A. KALMBACH

It is both easy and inexpensive to produce colorful slides from black on white original art work. That's right—India ink lettering, Varityper lettering, or even typewriter letters and numbers on a white background make fine masters from which colorful slides can be made.

If you want a slide with white letters on a colorful background, the first step is to photograph the graphic (black letters on a white background) using Kodalith Ortho high contrast 35mm film. Develop the negatives using Kodalith Super Developer, parts A and B. The next step is to use the 35mm negatives as a master. Place a sheet of diazo film with the master and expose them in a diazo machine. The end result is colorful 35mm slides suitable for mounting. Not only is this process quick and inexpensive, but the end product is very colorful and effective. And just think of all the slides you can produce from just one sheet of diazo film!

A second alternative is to produce slides with black letters on a colored background. This can be accomplished by photographing the original graphic on a copystand using a sheet of diazo film to add color to the finished slides. The diazo film can be placed directly on the original graphic work and photographed, or the film can be placed over the lens of the camera. Remember, the exposure will be different depending on whether you photograph through the diazo film or directly onto it. I have had good luck with cyan and magenta diazo film under these circumstances, but a wide variety of colors of diazo film are available from which to choose. Be sure to use color slide film for this procedure. I use Ektachrome High Speed Type B under 3400K lighting conditions.

A third alternative will produce slides with white letters on a very rich blue background using the same original graphic. The process will seem confusing at first, but if you follow a simple steps you will be very pleased with the finished slides. Use Ektachrome X Daylight film, EX 135, which has an ASA of 64, but set the shutter with an ASA of 400. Then photograph the art work under 3400K lighting conditions and onto a sheet of orange diazo film. Develop the color slide film using the C-22 process.* You will be more than pleased with the results!

**This technique involves a chemical mismatch between Ektachrome X (a color reversal film) developed using process C-22 (chemistry for color negative film). If a commercial processor is doing the lab work, be sure it's C-22, not C-41. The new high speed process C-41 uses 100 degrees as standard temperature and that's too high for Ektachrome X.*

Master (original)	**Process**	**Result**
1. black on white	—Kodalith Ortho 35mm negative —uses 35mm negative as a master to make diazo colored slides	1. white letters on colored background
2. black on white	—photograph onto or through diazo sheet film —be careful of camera settings	2. black letters on colored background
3. black on white	—Ektachrome X Daylight Film (EX 135) rated at ASA 400 —photograph onto orange diazo film —process film using C-22 process	3. white letters on blue background

[5] Association for Educational Communications and Technology, 1980. Reprinted from *Learning Resources, Audio-visual Instruction*, May 1975.

4
SLIDE-TAPE EQUIPMENT

AN INEXPENSIVE, EASY-TO-BUILD, SLIDE-TAPE PROGRAMMER

TERRENCE LUKAS

There are many programmers on the market that automate slide presentations by synchronizing the slides with an audio portion. Most of these programmers, however, require a stereo tape recorder/player and use up one of its channels for the purpose of recording and playing back signals for synchronization. The price range is rather wide, with the least expensive being approximately $40.

This article discusses the construction and use of a programmer that is simple to build and use, costs only a fraction of the cheapest commercial models, and can be used with any tape recorder/player—monaural or stereo, reel-to-reel, or cassette. This programmer does not use an audio channel at all. Instead, a pencil mark is made on the magnetic tape at a point where the slide change is to occur. Thus, when you're using a stereo tape recorder/player you can have both stereo sound and synchronization.

Construction

All of the parts in this programmer are readily available at Radio Shack stores (Radio Shack numbers are given in parentheses after the part) or from most electronic supply houses.

1. Power line cord with plug (278-1255)
2. 6 volt relay (275-004)
3. 6 to 12 volt transformer (273-1505)
4. RS107 transistor (276-107)
5. 22 ohm resistor 1/2 watt (271-005)
6. 25K potentiometer (271-094)
7. 50 volt rectifier (diode) (276-1135)
8. 100 MFD 15 volt electrolytic capacitor (272-1028)

Connect the components as illustrated in Figure 1. If desired, a power switch may be used between the power line and the input to the transformer at point A. If the Radio Shack potentiometer is used, it already contains such a switch. Some important points to remember are:

1. Make sure that the pointed end of the bullet-shaped rectifier (diode), or the banded end on some other types, is connected in the right direction.
2. It is important that polarity of the capacitor is correct.
3. The base (B), emitter (E) and collector (C) of the transistors should be indicated by literature accompanying the transistor.
4. Connect the advance wires from the projector to the normally open switching contacts of the relay.
5. Turn the potentiometer to about one-half of its adjustment range.

Everything should be connected except for the two wires marked "to tape" in Figure 1. At this point you are ready to test the circuit.

Take a soft lead pencil and make a dense line on a piece of paper or on the coated side of a short piece of magnetic recording tape. Next, take the two wires marked "to tape" and touch one to each end of the pencil line (See Figure 2). The relay should be activated and, if you have the projector connected, it should advance. If the relay is activated without the contact of the "to tape" wires or if the relay is not activated by this procedure, adjust the sensitivity of the programmer by turning the potentiometer knob to the right or left. Recheck the circuit if there is any further trouble to make sure that all the wiring is correct and that Points one through four above have been followed.

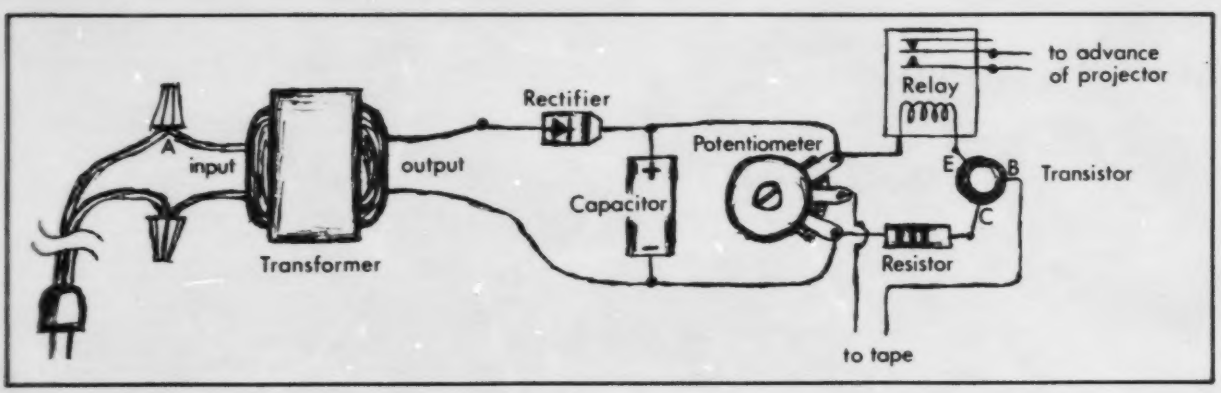

Figure 1

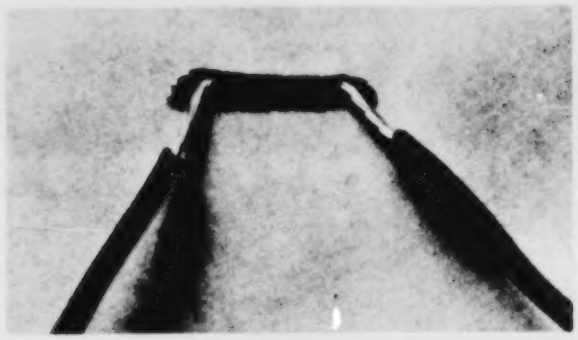

Figure 2

The final step is to connect the "to tape" wires to make contact with the magnetic tape. There are many ways of accomplishing this—the basics are presented below:

For Reel-to-Reel Recorder/Player

For reel-to-reel recorder/players this part is the simplest. No modification is necessary and nothing need be permanently attached to the machine. Simply construct two contacts as shown in Figure 3. This can be done by using two ordinary paper clips bent as shown and screwed down to a small piece of wood. The space between contacts can vary quite a bit. I find five to 10mm to be a good working distance. Attach one wire to each contact. Position this assembly so that the coated side of the tape passes over the paper clips (Figure 4) making contact with both. The assembly can either be taped in place for temporary use or permanently attached using glue and/or screws. You are now ready to program. When rewinding the tape it is usually best to position the tape to bypass the contacts.

For Cassette Recorder/Players

Due to the miniaturization of these units they are a bit more difficult to work with, but the two contacts can still be accomplished with a minimum of modification. The coated side of a cassette tape faces out so it is necessary to position two small contacts in such a way that they will go through one of the unused openings

Figure 5. The tape head (1) can be used as one contact and a small piece of brass (2) used as the second contact for cassette line sensing contacts.

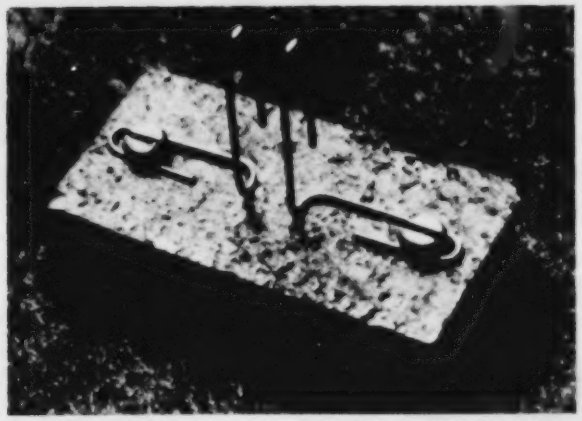

Figure 3

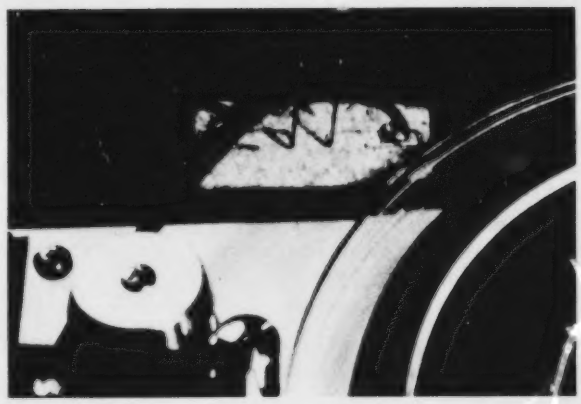

Figure 4

of the tape housing and make contact with the tape. In most cases one of these contacts can be the housing of the tape head and the other a small piece of brass—usually called shim brass (See Figure 5). The distance between contacts is variable. They may be very close but be sure that they do not touch each other.

Programming

After you have the narration recorded and your slides organized, all that you need do is listen to the tape, stop the recorder at the point that you want the projector to advance, and make a mark on the coated side of the tape with a soft lead pencil in the area where the tape contacts the assembly. The length of the line will depend on tape speed and the distance between the two contacts as well as the length of contact closure of the relay necessary to advance the projector. Too long a time may cause more than one advance and too short a line may result in no advance. You will have to experiment a little with your system to determine the best size to use. I find that in most cases a line about two cm is ideal.

It should be noted that this programmer can also be used with dissolve units. If the dissolve unit you have has a dissolve rate that can be changed by varying the impulse, this programmer is ideal since you need vary only the length of the pencil line.

To remove a signal, simply erase the line. You can alter the length of the signal by either erasing part of the line or by making it longer.

Variations

A number of variations in this type of programmer are possible. The small size of the programmer usually permits its incorporation within the tape unit itself and power can often come directly from the tape unit's transformer, thus eliminating the largest part of the programmer. Two programmers can be used to control two different projectors (or four projectors through the use of two dissolve units) by using two sets of contacts, one set that covers the upper part of the tape and another set that covers the lower part.

The slide-tape programmer described in this article is easy to build and operate. However, the soft lead used for programming the "cues" will also clog tape heads, so regular cleaning will be important. Also, the constant abrasion between the sensing contacts and the magnetic oxide will cause quite a bit of additional wear to the tape. Remember when mounting contacts (especially on a recorder with a metal deck) to be sure that they are properly insulated. — N.H.

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YOUR PROGRAM SYNCS

NEAL HALL

The lights went dim, the projector was started, and the speaker adjusted the small podium light. Then, CLICK, CLICK and the first slide was on the screen. CLICK, CLICK, and slide two appeared. History does not recall when someone first used a child's cricket (you know, that little spring metal thing your mother always told you not to swallow) as an audiovisual synchronization device, but we can all hope its day has passed. the remote control cord has replaced the "cricket", the nod of the head (which never made much sense in a darkened room), and such subtle forms of synchronization as "may we have the next slide please." Then, too, the tape recorder has replaced a person at the podium. Teaching a tape recorder to push the remote control button seemed no easy task, but it has been done and in a variety of ways.

If you have never done a synchronized slide/tape presentation, there are a number of synchronizing systems from which to choose. Perhaps the simplist utilizes a stereo tape recorder. The audio information is recorded on one channel and the cueing information recorded on another. We'll wait here while you consult Figure 1. It represents the major track configurations used on audiotape recorders for ¼" reel-to-reel, and 150 mil (cassette) units. It's convenient to use a recorder with separate controls for recording each channel. The easiest way to proceed is to record the audio information on one of the stereo channels. Rewind the tape, and while listening to that channel, record the cueing pulses on the second channel. There are a number of devices which will encode (put the signal on the tape) and decode (listen for the signal in playback and advance the projector). One of the simplest and most inexpensive is a unit called the Kodak Sound Slide Synchronizer (less than $40) Figure 2 gives an idea of how simple this hookup is.

Another relatively simple system (for encoding and decoding cue pulses) utilizes a standard cassette tape as the storage capsule for both the audio information and the synchronizing track. The encoding and decoding functions are built into the cassette tape recorder. A slide projector is connected to the recorder and the cassette can be cued by the press of a button. These units use the standard monaural cassette format for playing back the narration track, but include a head which encodes and decodes the cueing channel.

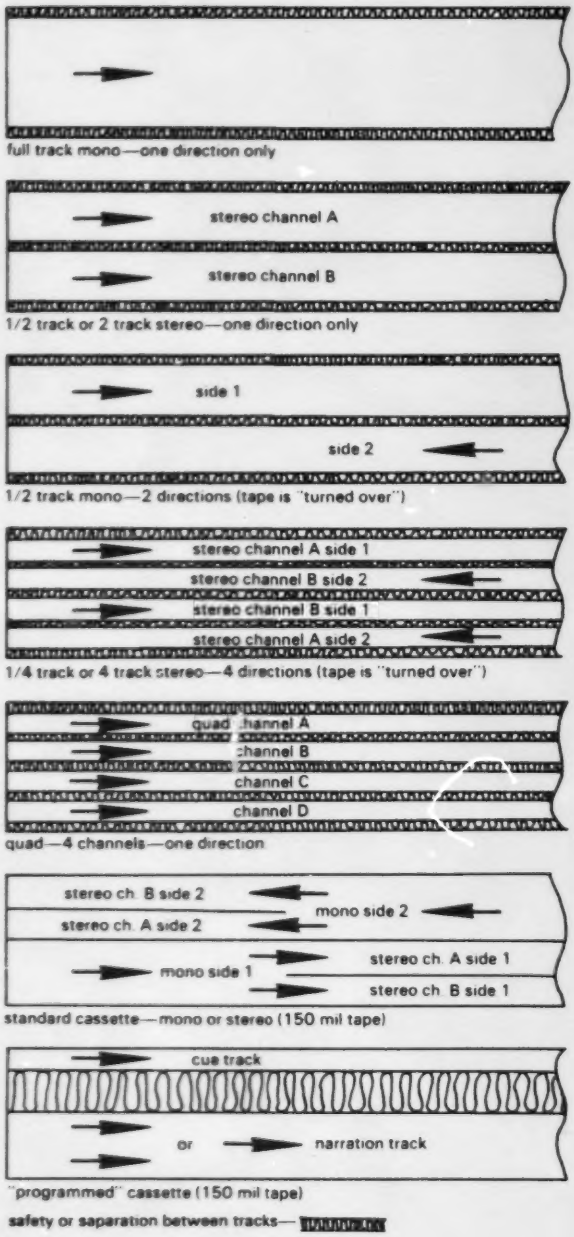
full track mono—one direction only
stereo channel A
stereo channel B
1/2 track or 2 track stereo—one direction only
side 1
side 2
1/2 track mono—2 directions (tape is "turned over")
stereo channel A side 1
stereo channel B side 2
stereo channel B side 1
stereo channel A side 2
1/4 track or 4 track stereo—4 directions (tape is "turned over")
quad channel A
channel B
channel C
channel D
quad—4 channels—one direction
stereo ch. B side 2
stereo ch. A side 2
mono side 2
mono side 1
stereo ch. A side 1
stereo ch. B side 1
standard cassette—mono or stereo (150 mil tape)
cue track
or
narration track
"programmed" cassette (150 mil tape)
safety or saparation between tracks—

Figure 1

Graphics accompanying this article by Sandy Spicer

[1] Association for Educational Communications and Technology, 1980. Reprinted from *Audio visual Instruction*, November, 1975.

These are two relatively simple systems and you will be amazed at how smooth and professional a presentation you can achieve with them. Instead of one projector, you can use two projectors and a dissolve unit. One dissolve unit, although controlling two projectors, only requires a single change cue.

If you want to get more exotic than the single channel (one projector or one dissolve unit), life gets a little more complicated. Before beginning any discussion of synchronizers, it might be beneficial to look at how synchronizers do their job. The synchronizing unit is constantly listening to the tape for a set of signals which make sense to the unit. These signals can be intermixed with the audio information and then filtered out before the audience hears the track, or they can be stored on their own separate audio track. An example of the first system, the inaudible system, is the cassette or record/filmstrip projector. On these units, the narration track (narration, music, sound effects, etc.) is filtered so that all frequencies below 120 Hz are attenuated (turned down). By not recording any frequencies lower than 120 Hz in the narration, this leaves the very low frequencies open to record sync pulses. 50 Hz is the frequency used for sync pulses. When the audiocassette is played back in the cassette/filmstrip projector, a special circuit (similar to the crossover network in a hi-fi set) sends all frequencies above 120 Hz to the speaker and on to the audience. The circuit sends all frequencies under 120 Hz to the advance mechanism. Because we took out of the sound track all frequencies below 120 Hz and put in the 50 Hz advance tone, we have basically created two information channels on one tape track. The record/filmstrip system is similar but uses a 30 Hz tone to advance the picture. This 30 Hz tone interrupts an otherwise constant 50 Hz tone used as a lockout of record noise and machine noises. From there on, the phonograph system gets rather complicated. Let's just say it works well and return to the tape recorder and separate synchronizing units.

Because most of the more popular synchronizing devices prefer to have one track of their very own, a stereo or four track tape recorder works best. What you record in the way of a synchronizing signal is entirely up to your synchronizer. Since there is little or no standardization between units, encoding and decoding should be accomplished with the same type of unit.

Synchronizers do their jobs in a number of ways. There are physical systems, amplitude systems, frequency systems, digital systems, optical systems, and punch tape systems. In the physical system, electronic contact is generated by placing some conducting substance on the audiotape. Some systems use adhesive-backed metal foil which is stuck to the tape. As the tape is played, it goes through a special sensing head and the conductive material is used to complete the circuit which advances the slide. Other physical systems use a special pencil to make marks on the tape that will, when passed through the sensing head, complete the electronic circuit.

The amplitude system (and there are not many of these) utilizes a circuit which listens to the cue track of the tape. When a signal of a specific volume is heard, the system completes a circuit and advances the projector.

In a discussion of the frequency system, amplitude (volume) and frequency (tone) are both brought into play. The monitoring circuit basically listens for a certain frequency as the "go" command to complete the circuit. These systems have some amplitude adjustment which enables them to properly discriminate the cue signal from extraneous tape noise. The frequency system also opens some other possibilities. The cue track for some systems is used to record a number of different frequencies. Each frequency completes a different circuit and thereby gives a command to a different piece of equipment. Three, four, or more projectors or dissolve units can be used depending on the type of sychronizer. For example, three projectors

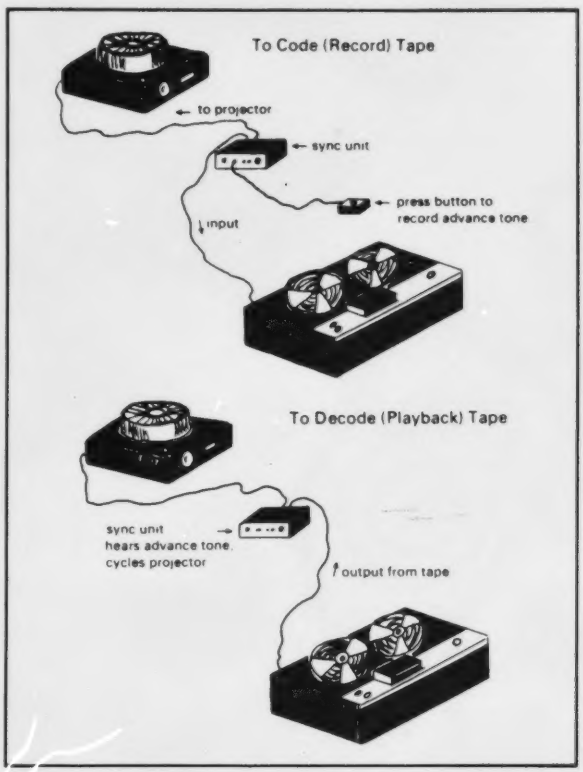

Figure 2

could be connected to a certain sychronizer. The low frequencies advance projector one, the middle frequencies advance projector two, and the high frequencies advance projector three. Frequency discriminators listening to the cueing channel pick up the frequency to which they are tuned and press the "go" button completing the proper electronic connection. The more frequency discriminators built into the synchronizer, the more projection units that can be controlled.

Let's take a look at what could be considered a basic three screen show. We'll use three dissolve units, six projectors, so we can dissolve on each of the three screens. We need a control signal for each unit, but we also want to control combinations of units. So, to control our basic three screen show we need cue one, cue two, cue three, cue one—two, cue one—three, cue

two—three, cue one—two—three. That's seven cueing channels and quite a lot of buttons for a tape recorder to keep straight.

Digital systems perform basically the same functions as frequency discrimination systems but perform their function in a slightly different way. In the digital system, the proper projector is cycled when its corresponding channel is triggered by the right digitally coded information. The digital information is generally encoded on one specific frequency and within a certain amplitude range. As kind of a general comparison, consider the old type telephone dial versus the new push button system. With the old type dial you could hear the clicks as you dialed a specific number. The number seven produced seven rather rapid clicks on the phone line. That was digital. The new touch tone telephones produce beeps at different frequencies to equal the numbers. They are basically frequency discrimination units.

The last two systems, optical and punch tape, have basically one thing in common. They need only one "go" signal from the tape recorder and can interpret that signal into a variety of functions. One optical system uses the single "go" command from the recorder to advance a projector that contains special two-by-two slides with holes punched in them. The holes allow light to fall on photo electric cells. The photo cell then completes a corresponding electric circuit and advances the show unit. If you have nine photo cells you can independently control nine functions by punching holes in the blanks that allow light to fall on the proper photo cell. Each time the photo cell illuminating projector is advanced by the tape, a new punched slide drops and a new combination of demands is given to the show units.

The punched tape system uses paper or mylar rolls into which holes have been punched. When the "go" command is received from the tape recorder, the punched tape is advanced to the next set of holes. The coded information is interpreted by the synchronizer and relayed to the corresponding show equipment. The punched tape then waits for the next "go" signal from the tape player to repeat the process. The punched tape system is capable of controlling a large number of cue functions and is about the most versatile and reliable system in use today. The punched tape system has gained wide acceptance for storage of commands of complex shows. Using a cue to open and close power relays, 16mm projectors can be started and stopped, lights can be turned on and off, curtains can be opened and closed, and anything that can be automated can be controlled via the stored command and related electronic circuitry. Remember, only one "go" command needs to be put on the audiotape, allowing even the simplest synchronizer to be master of the most complex punched tape system.

"But is it all that simple?" you ask. Well—yes and no. Yes, when everything is working right and no at all other times. Some of the problems you can run into are difficult to solve because we are dealing with "machine talk" that's not meant for people. Getting the sync signal on at the proper volume level is important. If it's too loud, you can overdrive the storage capacity of the audiotape, distorting the frequency, and the synchronizer may ignore the command. Too low a signal and again you're ignored. Those 29¢ meters on the front panel of most recorders work all right as a guide but generally don't give you a precise indication of the strength of the signal being put on tape. Also, if you change tape stock you'll need to recalibrate the meters after running tests. **Run some experiments with your equipment!** Another hint—use new or carefully degaussed tape. Extraneous tape noise or leftover signals caused by inexact head alignment may cause false cues. Check out compatibility between tape recorders if you record on one unit and plan to play back on another. If the heads are not set to the same standard, you can have reliability problems.

Sometimes electronic noise can cause a false advance signal. Such noise is referred to as "line spikes" and can obtain the frequencies your programmer is tuned to. "Line spikes" generally cannot be heard by the human ear, but they can get into the recorder electronics and raise havoc. It's not common but it can happen.

Once I programmed a show at home and it ran perfectly five or six times. The next day at the office with the same equipment, it ran wild. The culprit turned out to be the building elevator. Everytime it reversed direction, electronic noise came down the power line to the recorder. This somehow caused audio clicks in the cue track electronics. Those clicks contained the proper frequency at sufficient strength, and the rest is embarrassing history. What problems you encounter in working with most of the modern day units will not cause you premature loss of hair. The proper equipment, a little practice, a careful eye on the instruction book, and a word from the manufacturer if there's something you don't understand, will allow you the luxury of being a part of your own audience.

5

EXAMPLES OF SLIDE-TAPE UTILIZATION

DEVELOP YOUR OWN MEDIATED CAREER INFORMATION

RICHARD L. DOUGLASS
DALE G. ZIKMUND
JAMES T. HORNER
ROSEMARY L. HORNER

Choosing an occupation is a crucial decision facing a young person, one which influences the realization of other goals as well as overall life satisfaction. Finding a way through the maze of job possibilities to an informed decision requires information about available occupations, their requirements, and what they offer. Current literature indicates that this information must be accurate, adequate, and up-to-date, should come from persons employed at the occupations in question, and should be readily available to students, in an easily interpreted form.

Selection of Media

Research confirms the audiovisual materials contribute to learning efficiency. The type of media chosen for presentation of occupational information should allow the developer of materials to do the following things:

- Collect and record information directly from a worker in a particular occupation (e.g., cabinet maker).
- Revise inaccurate information readily, as indicated by a validation procedure.
- Provide this occupational information when needed, in an easily interpreted form.
- Update information easily when required.
- Accomplish this on a modest budget.

At the University of Nebraska, in a project to develop materials depicting 125 occupations, the authors found that synchronized slide-tapes met these criteria. Production and editing equipment were readily available, and software materials were less expensive than other media such as motion pictures and videotape. The comprehension of slidetape presentations requires minimal reading ability. Perhaps most importantly, slide-tapes can be updated easily, with little effort or expense.

Phase One—Gathering Information

What do students want and need to know about jobs? This question, and answers supplied by the American Personnel and Guidance Association, rural sociologists, economists, psychologists, and educators, guided the development of the following questionnaire, which was used in interviews with workers in each occupation.

Questionnaire

"We appreciate very much your cooperation in the occupational education activities which we are conducting at the University of Nebraska Agricultural Education Department. The questions we will ask you are contained on this sheet. You might find it helpful to read them over in organizing your thoughts and responses."

1. Would you please describe your job? What do you do in a typical day?
2. Are there any specific tools or equipment that you use on this job?
3. How many hours per week do you work?
4. Do you have freedom on the job, or are you under close supervision?
5. What interests, physical requirements, and special abilities are helpful to a person working in this area?
6. What is the minimum education or training required for employment in this occupation?
7. In what way do you feel your occupation is important to our total society?
8. How are your opportunities for advancement and what is the employment outlook in your occupation?
9. How do you feel your job compares with other jobs in terms of being able to support a family?
10. How would a person find job openings in your occupation?
11. What are the advantages and disadvantages in this occupation?

Thank you very much!

After a thorough search of available occupational information on each job title to be produced, a job brief was written. A person currently working in each job was located and interviewed. College students working in the Department of Agricultural Education learned to use a reel-to-reel tape recorder and proper interviewing techniques. After explaining the project to each worker, they recorded an interview on the job using the questionnaire.

Interview Techniques

The following techniques proved successful:

1. Ask the supervisor (employer or manager) to suggest candidates for the interview. We usually got a worker who was a bit of a ham. A worker who could

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talk at ease during the interview was an asset.

2. Do not send out the questionnaire in advance; respondents tend to write out their answers and read them during the interview.

3. Keep the microphone six to eight inches from the mouth of the person talking. Use the manual volume control rather than the automatic volume control; this will prevent background, on-the-job noise from getting amplified during pauses.

4. Make a trial run. Ask a few questions, then stop; listen to the recording, then start over. This helps the worker relax and results in a more candid interview.

5. At the end of each interview, ask if any questions should be asked again. If so, keep the recorder going and try again.

6. Have the interviewee and the employer sign a release form to allow use of the interview for educational purposes.

Phase Two—Editing

College students then edited the audiotape and prepared a storyboard. Two reel-to-reel recorders and a patch cord were used to duplicate selected portions of the interview. Guidelines for editing were: eliminate distractions from the interview; shorten long pauses; eliminate repeated answers; and hold the total interview time under 10 minutes. Each edited interview was evaluated by the author on the criteria of accuracy (compared with the job brief), technical quality, and estimated appeal to young people. Each usable interview was transcribed onto index cards, one thought per card. Students sketched on each card the composition of a visual that should accompany the narrative.

Phase Three-Photographing

Photography was the third task. The authors found that if the student who had recorded the interview also took the slides, the results were superior to those obtained by a different photographer. The interviewer was able to recall responses to questions and take slides illustrating what was said. Photographers used an automatic slide camera, flash, 126 Ektachrome film, and the storyboard cards. The instant automatic camera was used because the budget was limited, the students were not skilled photographers, and the resulting percent of usable slides was satisfactory.

Superior results were obtained if:

- The film and batteries were fresh. (This eliminated technical difficulties.)
- The student took several exposures of each scene.
- The film was processed commercially.

Title, credits, and illustrations were photographed using a copystand and a single-lens reflex camera.

Phase Four—Matching

Finally, slides were matched with the recorded interview. The storyboard cards provided a starting point. (Incidentally, this process brought out the creativity of the college students doing the work. Using the job brief, the interview, and the slides, they had the task of presenting an accurate and interesting view of the job.) The aim was to change the slide whenever a new thought was presented but at least every nine seconds. When a question was being asked, the slide often showed the interview in process or a general shot of the job surroundings.

After the slides were matched, the same student recorded a synchronizing tone on the second track of the audiotape using a stereo tape recorder. (We also used a reel-to-reel language laboratory recorder.) After a test run and review by the authors, the tape was duplicated onto a single track for use in a monaural tape recorder.

Phase Five—Validating

A jury of persons including workers and educators familiar with the jobs evaluated the quality and accuracy of the final product. Field tests were made on a variety of groups, including junior high, high school, and culturally disadvantaged youth (17-22 years of age), postsecondary students, adults, and a composite age group, to determine whether this mediated career information modified aspirations, attitudes, and knowledge about the world of work.

Results of Field Testing

One study involved 279 eighth-grade students and three guidance counselors in one school. Each counselor had one Mediated Career Information (MCI) treatment class and two group-guidance classes. The MCI group of 90 students viewed slide-tape presentations of 100 occupations. The other group of 180 students followed the usual group guidance program, which included a wide variety of audiovisual materials, class discussion, and a required paper on a selected career. The latter program was generally considered excellent.

Evidence from this study suggests that occupational information provided solely by slides and tapes is at least as effective as that presented in various ways in the group guidance class in modifying aspirations, understanding, and attitudes toward the world of work.

In another study, 253 high school sophomores in guidance class viewed eight slide-tape presentations. The students were randomly assigned to treatment (132) and control (121) groups in a 20-item posttest-only design. The experimental group had higher knowledge-of-occupations scores, significant at the .001 level of confidence. Also, the aspirations level was significantly higher at the .01 level of confidence. No differences were observed in their "opinions about work" score. This age group was attentive and some individuals asked for an extension of the activity.

From our research we have concluded not only that slide-tape presentations of occupational information are quite acceptable to youth at various age levels, but also that it is effective, especially at the junior high and secondary levels and with culturally deprived youth, in modifying aspirations and knowledge about the world of work.

Recommendations for Local Productions

Encouraged by results of field tests and numerous requests from teachers and counselors, the authors feel confident that mediated career information is needed. There is merit in student involvement in the development of slide-tape presentations. Production techniques are simple and inexpensive. Workers are

usually flattered when kids ask about their work.

Advisory committees and published occupational handbooks can help validate the accuracy of materials produced. Media center coordinators, librarians, and vocational counselors have the skills, equipment, and access to students who can produce slide-tape presentations on specific jobs. The effectiveness of materials developed using the procedure described above has been well demonstrated. The result—students with more realistic self concepts and career decisions.

SLICK SLIDES FOR RELUCTANT READERS

TERRY McCONNELL

A reading specialist and media specialist, working as a team, can develop an exciting technique for remedial reading instruction: producing slide tapes based on popular paperback books. A slide tape is produced that builds up interest and suspense in a book; the slide tape is stopped at its climax, and students are directed to read certain pages in the book itself to find out what happens next. Here's how two junior high school teachers did it:

With the help of student actors and camera operators, we produced slide tapes based on two books by S.E. Hinton: *The Outsiders* and *That Was Then, This Is Now*. Both books are very appealing to junior high students, possibly because they deal with adolescent problems such as drugs, dating, and gang fights. Since the characters are American teenagers of the 1960s and 70s, it was easy to get student actors who fit the descriptions of characters in the book. The scenes take place in common settings, such as city streets, drug stores, bowling alleys, and parks.

Why a slide tape for a local production with student talent? Why not use videotape or 8mm film? We determined beforehand that the learning materials should be suitable for individualized instruction. A slide projector and audio cassette player are much easier for a student to manipulate than an 8mm projector or videotape recorder. There is less chance for breakage with slides, and the editing is much less time-consuming than for film or videotape.

Before we took any pictures, a storyboard had to be written. Most of the dialogue in the tapes was taken directly from portions of the books, with some shortening and modification. For example, a scene that takes place at a drive-in movie at night was changed to a drive-in hamburger stand in the afternoon to make shooting more convenient.

Students were chosen for the various roles, with each student both acting and speaking his part. Two criteria were used in casting the students: (1) they had to fit to some extent the physical appearance of the characters they were portraying, and (2) they had to have reading or motivational problems in English or reading classes. The student actors showed interest in the project, and most actually did read one of the books.

Because the actors had reading problems, producing a tape of acceptable quality required time and patience. It took about four hours of work to get a finished product of fifteen minutes' length. Having the storyboard script with us at all times made the process much more simple.

Students also were involved in the actual camera work. In *The Outsiders*, students made Instamatic camera slides to supplement the 35mm slides. The students also had to cope with reading the script in order to organize the slides into proper sequence.

A reel-to-reel tape recorder was used for the audio portion. From the master reel, casettes were made for classroom use. A bell signal was used to indicate the advance of each slide.

A series of written exercises was designed around both slide tapes. The first step in these exercises was to continue reading the book from where the slide tape ended. At the end of each tape, the students were told on what page to begin. *The Outsider* exercises involved vocabulary and word attack skills that the students would need to make sense out of the portions of the book they were reading.

That Was Then, This Is Now was presented to small groups of ten to thirteen students. Most were reading one to four years below grade level. The room was divided into six centers. The first center used the slides and tape with follow-up exercises. The students were taken to a climax point in the action using the tape and slides; they were then given the text to find out what happened next. Self-checks were made by the students with the follow-up worksheets. Four additional centers used the tape along with the follow-up exercises. The remaining center used both slides and the tape along with follow-up work.

The exercises consisted of word puzzles, scrambled words, and other games. They emphasized vocabulary; use of context clues; sequence; literal, interpretative, and applied comprehension; and following directions. As the students completed each exercise, they were able to correct their work and receive immediate feedback. The exercise program was self-paced by the students and took place during three 50-minute class periods.

To find out whether the slide tapes were having the hoped-for motivational effect, the students were asked to fill out questionnaires after completing *That Was Then, This Is Now* exercises. All the students who had seen the slide tape indicated that they read and com-

[1] Association for Educational Communications and Technology, 1980. Reprinted from *Audiovisual Instruction*, September 1976.

pleted at least one of the learning exercises. In addition, 66 percent said they intended to read the book, 94 percent felt that "this was a good way to learn," and 54 percent said the slides and/or tape were their favorite part of the package. Observation of the students at work also proved that they were interested in the story. Even those who expressed a great dislike of reading were stimulated to read and find out what happened at each climax point.

One of the biggest factors in the project's success was that the students knew the actors personally. This helped them to identify more easily with the characters in the story. The students' familiarity with the local settings also increased their interest, as did the game format for exercises. These slide tapes stimulated students to work on their reading skills. They provide an example of how nonprint materials can make print materials more appealing to students.

ATTENDANCE PROBLEMS? TRY A "SUCCESS STORY" SLIDE SHOW

WARD HOLM TANZER

Our problem was not unique. Delaware Technical and Community College, Southern Campus, attracted hundreds of new students yearly because it awarded associate degrees in various lucrative technologies and placed 80 percent of its graduates in good jobs in their fields. Students liked Del Tech. However, over half the freshmen seeking admittance proved to be deficient in English and were required to take a no-credit pre-tech writing course before being accepted in a technology. Progressing at their own speed, some students breezed through pre-tech writing in short order. Others took a long time. With these, the light at the end of the tunnel often dimmed. Attendance fell off. Unofficial withdrawals mounted. Many who aimed at a technology never arrived there.

Del Tech Motivational Program

To help correct this situation, the English staff developed a number of stratagems for pre-tech writing students. We set up individual "encouragement conferences." We telephoned students who stayed home. We ironed out job-class schedule conflicts. The chairmen of technologies wrote memos of congratulations when students passed the half-way mark in their writing course. Then, last winter, the English staff decided to add another arrow to its quiver—a motivational sound slide show.

Step 1: Selecting a Case History

The basic aim of our slide show was to picture for the student the rewards of sticking it out, of acquiring an associate degree. The most effective way to achieve this objective, we felt, would be through the use of a case history that was a success story. Consequently, we searched the college files for an archetypical student: one who had applied for admittance to a technology but had been barred because of his deficiencies in English; who had been assigned to pre-tech writing and had worked his way through it; who had been admitted to a technology and in the course of taking his technical subjects had passed English I, II, and III; who had finally achieved his associate degree and after graduation had found himself in a rewarding job. Last but not least, we sought a person who not only would be willing to participate in such a venture, but also would be working for a boss who would permit him to be photographed.

The staff found all these qualities, and more, in an electronics student named Norman Travis, who had graduated two years before. Norman had come up the hard way. He had perservered. He had triumphed. Now with IBM, he made an excellent salary as an associate customer's engineer, servicing computers and other data processing equipment for prestigious firms like DuPont. We talked to Norman and to his supervisor at IBM. Both agreed to cooperate. *The Norman Travis Story* was on its way.

The leading character plays himself in The Norman Travis Story, *a motivational slide show developed by the English staff at Delaware Technical and Community College, Southern Campus.*

Step 2: Structuring the Script

Shooting a slide show without a complete script is like building a house without a framework. Once we made the basic technical decisions—that we would shoot in 35mm color and use cassette sound—we set technicalities aside and concentrated on what we wanted to say.

After talking among ourselves—and with Norman—

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we finally produced a treatment with the following seven sequences:

1. State the problem: The English staff asks Norman, "Is pre-tech writing worth all the agony it costs students?"
2. Show Norman in all his electronic glamour on the job today.
3. Flash-back to Norman's first days at Del Tech five years ago; show his displeasure at being assigned to no-credit pre-tech writing.
4. Quickly cover Norman's progress after he accepted pre-tech instruction and began the long pull toward graduation.
5. Skip ahead to Norman in present job; he illustrates how important it is to be able to write and speak proper English with his clients and supervisors.
6. Dramatize Norman's straight-forward advice to pre-tech students: English is a vital part of education; regular attendance and constant study is essential.
7. Summarize the advantages of Norman's way of life compared to the pick-and-shovel existence of the drop-out.

Step 3: Writing the Script

Knowing that dialogue was impossible to use in a slide presentation, we rendered the script in simple narrative style, as a narrator would record it on tape later. The first lines of our show ran as follows: "This man's name is Norman Travis. He started in pre-tech five years ago and is now an associate customer's engineer servicing IBM computers. Not long ago the English Department called Norman. . . ."

In scripting, we used the right half of the page only for narration, leaving the left side open for shot descriptions later. We wrote five drafts of the narration, ending up with a 12-minute script.

When the script was completed, we began filling in

The show stresses the importance of English, both written and oral, in the job of associate customer's engineer at IBM.

"Knowledge of English is like information in a computer. First the data is stored. It is checked

then, when it is needed, out it pops, ready to be put to use."

the left or picture side as shown in the chart.

To make the show "move" and prevent dragging, we fitted in as many shots as we could to the narration. The final count was 95 shots to approximately 1,700 words of script. We numbered all shots consecutively as they were written.

Throughout the writing, we tried to keep in mind the old motion picture adage: the worst technicians in the world can't ruin a good script; the best technicians can't rescue a bad one. We also tried to impress our colleagues or ourselves as we wrote; we were reaching toward pre-tech students, some discouraged, some confused, most of them cynical.

Step 4: Shooting the Script

When the script was as good as we could make it, we broke it down and, ignoring sequence of action, grouped shots together by location in a set-up list. We had 10 shots in the data processing room, for example; 8 shots in a classroom; etc.

We next cased each location with our college photographer, determining ahead of time exactly where the camera would be located, which actors and extras would be involved in the shot, and whether the shot would be a close-up (CU), medium shot (MS), long shot (LS), or establishing (ES).

We had notified Norman, of course, as well as IBM, Dupont, and other participators in the show about our progress and the date we wanted to photograph. On shooting day Norman arrived at the college at 8:30 with three changes of clothing; the photographer came with his Honeywell Pentax Spotmatic and 15 rolls of Kodak High Speed Ektachrome. We were off. By five o'clock we had completed shooting at all locations. To play safe, the photographer "bracketed" many shots as he took them, meaning that he photographed each scene three times with three different aperture openings. He also experimented with different camera angles. During the day he made over 300 exposures.

Later, our college artist photographed several drawings which were required by the script and also numberous "inserts" (close-up shots of inanimate objects like books that can be shot on easels or tables).

When the slides came back, we selected the best exposures, placed them in a projector, and, reading the narration aloud, gave *The Norman Travis Story* a trial run. We found several places where the action slowed and interest lagged. To correct this problem, we cut the script again and added still more pictures, making use of the extra shots taken with different angles. Finally, when the *Story* had 113 slides and only 10 minutes of narration, it seemed right.

Step 5: Recording the Voice-Over

Our script started with a regular off-camera narrator, but switched to Norman's voice when he began telling his story.

One of our instructors provided the opening narration, and we would have liked very much to have used Norman's own voice for the remainder, however, caution argued otherwise. A successful narrator must have a bit of ham in him. Norman had none. We strongly suspected that like most inexperienced narrators he would stiffen up under the tensions of recording sessions, sound as though he were reading the script (which he would be), make frequent mistakes, and become very unhappy. As a substitute, we selected—with Norman's full concurrence—a young black counselor who was able to fit his voice to Norman's image and possessed the dramatic experience to record page after page without making any fluffs.

In recording, we had the assist of the Del Tech audiovisual technician, who recorded the voices on ¼-inch tape, edited the tape, and transferred the sound to a cassette with a converting facility.

Step 6: Cueing the Cassette

When the cassette was ready, we loaded it into our Singer Caramate and rehearsed the show a few times, changing the slides in the carrousel manually. Numbering the shots on the narrator's script, we made one last check, and then cued the tape electronically by pushing the "advance" button on the Caramate. The entire operation took less than an hour, at the end of which we were sitting back, listening to the *Story* play itself automatically. Originally, we had experimented with music but decided finally that music gave a pretentious and a stagey effect to a picture that was basically a documented experience. All the show seemed to need was voice and picture—and the story to carry it.

Our out-of-pocket expenses in producing the *Story* were astonishly small, less than 1/100 of the cost of a professionally produced 16mm training film.

Results of the Slide Show

When we screened the *Story* for pre-tech classes, we were pleased with the reaction. Students seemed to hang on every word. No shuffling. No wandering glances. Exclamations of approval. Word about the show got around. IBM ordered a copy for a New York training facility. Four newspapers wrote up the project. Other Del Tech campuses asked for copies. So . . . success.

Perhaps. As every instructor knows, it is dangerous to judge AV on the first impressions it gives. The student who raves the loudest about a presentation may be the first to cut class the next day. Also, the *Story* was not targeted toward the press or IBM, flattering though their attentions were; it was produced for pre-techers. They would be the final judges. Not until we showed the picture many, many more times could we expect a dependable response pattern to emerge.

Meanwhile, we hope that the *Story* brightens the light at the end of the tunnel a little for students and provides reinforcement to our general motivational program. If the *Story* helps salvage just a few careers in its time, it will be worth all the effort we put into its production.

MAKE THE MOST OF VACATION SLIDES!

GERALD F. BARKHOLZ

Many articles have been written which describe a uniform method for planning a slide-tape presentation to be used in the classroom. But there is a way to make the most of those pictures that are "unplanned." Slides taken on a vacation or sightseeing trip can be put together to become a useful classroom experience for your students.

The traditional procedure for planning a slide presentation is to begin by listing learning objectives—keeping in mind that all content, both visual and verbal—must support those objectives. Then, after analyzing the audience in terms of background, level and expectations, one begins to collect material and write down ideas related to what is to be communicated and how it is to be illustrated. The procedure then calls for the formation of a storyboard: a series of index cards, each having a specific illustration and arranged in sequence. From here, the pictures are shot and the finished slides are correlated to the storyboard and a script is written.

It would be rather difficult to find fault with these procedures for planning and producing a slide-tape presentation. But what about the spontaneous pictures you take on a vacation or sightseeing trip where you may not know ahead of time exactly what you will see and photograph? Do these experiences and images go unshared? We are all willing to show our slides to family and friends. So why not turn these pictures into an organized presentation to be used with classes as well. You have the opportunity to share some of the unique and unexpected situations you encountered and to have a documented recollection for the future.

Generally you can follow the same steps for producing a slide-tape presentation mentioned earlier, but in the following order:

1) Shoot pictures and take notes
2) Arrange slides
3) Write script
4) Record script
5) Present slide-tape presentation to audience

One of the most important aspects of preparing a presentation of this type (aside from shooting good pictures) is taking notes and collecting data while on the trip. Your notes can be minimal as long as the presentation is prepared soon after the trip, while events are still fresh on your mind.

There are two good methods for collecting data. One is to keep a simple log or diary of your activities and notations of specific sights you photographed. A few words may be all that is necessary to bring back the significance of a particular shot. In addition to keeping a log, you can also collect brochures, pamphlets, and travel guides which do an excellent job of describing the local sights and also give historical background. Most hotels and motels have a pile of free booklets on the front counter on *"What to See and Do in _____."* These booklets provide you with invaluable information to use later when writing your script.

Another excellent method for collecting data is to carry a portable cassette tape recorder and record situations as they occur. This not only permits you to capture your own feelings and thoughts, but gives you the added opportunity to pick up some "local color." If you have a recording, you no longer have to say, "You had to be there to appreciate this old fisherman's philosophy," or to try to describe to others what it's like to bargain for goods in a straw market at Nassau. You could even get a local to describe a particular sight and record your conversation with him or her. The recordings not only give information for your script, but also provide actual sounds that can be mixed in with your commentary.

If you are visiting a foreign country or even a region in your own state that has its own characteristic music, a phonograph record can probably be purchased from a local record shop. This will provide excellent background music for any narration or can be used for breaks in commentary to allow your viewers to just enjoy the scenes on the screen.

After you have returned home and had your slides processed, you can move on to the next step—writing the script. Begin by spreading out the finished slides on a lighted slide sorter or light table. Arrange the slides in groups according to the subject in the pictures and then arrange these groups in what might be a logical order for presentation. Hopefully, you've taken several shots of each subject from different angles to add variety when showing them, as well as to allow you now to select the most interesting.

When you are satisfied with the way you arranged the slides, make a numerical list of all the slides you plan to use, identifying each slide by a word or phrase which tells you what the picture is about. With this list in front of you, begin writing as if you are describing your trip and the pictures to a friend. Consult your notes so you will not leave out little bits of information that add interest. Place little numbers over key words as you write to correspond to the slide which is coming on the screen as you talk. Remember that the pictures

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are there to bring to life what you are saying. Avoid saying, "This slide shows . . ." Just tell what it is so that one picture flows into the next during a continuous commentary.

When you have completed your written presentation, record it on tape with appropriate background music with either an audible or inaudible signal for synchronizing the slides with the tape. You may even prefer to have no signal and depend on your memory or use of the script. Whichever you choose, you now have a completed presentation ready to show to your classes or to your friends.

When you decide to enrich the instruction of your students with this type of slide-tape presentation, you are actively engaged in communicating something personal to your audience. It is personalized because you're sharing your experiences and selecting those images which mean something to you and which you feel have relevance to the education of your students. Because you know your audience, you are in a position to plan your presentation for that audience. You can turn your next vacation slides, or slides you may already have, into a rewarding educational experience for your students.

BILINGUAL SLIDE-TAPE LIBRARY ORIENTATION

JAMES MARTINELLI

Librarians, educators, and others who are faced with the need to present orientation programs to individuals or small groups have long recognized the effectiveness of slide-tape presentations. The potential of the slide-tape format to present bilingual library orientation programs, however, is a new area of exploration. Many service-oriented institutions in urban localities composed of a large population to whom English is a second language would find the slide-tape format very effective to describe the nature and extent of their activities.

Spanish-speaking students comprise a significant portion of the total student body of Passaic County Community College (PCC)—a new urban community college located in the business district of Paterson, New Jersey. Many of these students have difficulties with English. This language barrier is a formidable obstacle to academic success for many students who are very intelligent and highly motivated.

A working knowledge of how to use the library is necessary to a student's academic success. Most freshmen entering college do not realize the broad and sophisticated range of information resources at their disposal in the library. But many Spanish-speaking students enter college with virtually *no* knowledge of American library practice at all. With the support and assistance of the librarian and the media coordinator, we succeeded in producing a Spanish slide-tape library orientation program. An English language program was also produced.

Four fundamental information components of the library are covered in the presentation: 1) the card catalog and the Library of Congress subject headings list; 2) general and specialized encyclopedias and dictionaries; 3) biographical reference sources; and 4) periodical indices. The program is orientational in nature, not instructional. Students are advised in the introductory narration not to take notes. The primary objectives of the program are to present a general picture of the extent of information resources in the library and to motivate the student to seek assistance in their proper use.

While the content of the Spanish-language program is the same as that of the English, the visuals used are directed toward Spanish-speaking students. When biographical reference sources are discussed, for example, a slide showing an article about Cesar Chavez accompanies the taped narration explaining the coverage of a specific biographical reference tool. We made graphics containing short statements in Spanish using a dry-transfer lettering method. Slides were then made from the graphics to supplement and interpret parts of the narration. For example, when the narration discusses how to use the "Micropaedia" section of the *Encyclopaedia Britannica*, a slide is shown saying "Micro = Pequeno (Small), Paedia = Conocimiento (Knowledge)." The narration tells the student that the "Micropaedia" is useful in answering short, ready-reference questions.

One conspicuous advantage to a locally-produced library orientation program is its ability to introduce the viewer to individuals in the library who are there to serve his information needs. A variety of circumstances coincide to inhibit the Spanish-speaking student at PCC from using the library's total resources. Among these are the language barrier, ignorance of American library practices and information search strategies, and as often as not, plain, old-fashioned shyness. To combat this tendency, a slide is shown of one of the library's department heads after each of the four basic resources is discussed. The taped narration urges the student to seek assistance when using any of the library's information resources.

While producing a slide-tape presentation is one problem, getting people to watch it is another. In fact, getting people to know it even exists can be difficult. At PCC, a full description of the program is carried in the library's newsletter and in the school newspaper at the start of each semester. In addition, announcements are posted throughout the college campus. An even better publicity strategy, however, would be to present the program in a public area with continuous showings. Current plans at PCC call for using a 30-minute continuous loop tape cassette with synchronized slide changes to present the program for an entire day at the start of each semester. The student lounge area will be the scene of the presentation. One day the English program will be shown, the next day the Spanish program will be shown. Though the lounge area is not the most conducive place for rigorous concentration, it will serve to introduce the program to a large number of students and let them know it is available for individual use as well.

Another effective means of publicizing the program to students is to involve them in the actual produc-

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tion. A team of Spanish-speaking students at PCC translated the English language script for us. Much of the success of the presentation was due to their enthusiasm, which rubbed off on their peers.

The slide-tape format can make an excellent foreign-language orientation program. Slide-tape programs are cheap to make, easy to use, and can pay tremendous dividends in user satisfaction.

6
INNOVATIVE IDEAS

HOW TO PUBLISH YOUR OWN SLIDE-TAPE PRESENTATION

MICHAEL BENTLEY

The presentation is over—three fantastic screens—stereo sound—dissolve effects, 6 weeks of careful preparation and production of materials, 4 hours of set-up and rehearsal for the presentation itself. There's a glow—a feeling of a job well done. And then the note comes. The Assistant Superintendent for Curriculum missed it and wants to know what you said. How do you inform him and the others whose requests will inevitably straggle as the word gets around? The options are really a bit limited.

You can always rerun the program . . but for one person who wants to know what you said, not how you said it? You can call him up and tell him about it . . but that sort of subverts the whole idea of preparing a multimage presentation. You can send him a copy of the script from which you worked . . rough notes, changes, pencilled sketches and all. You could even have the script typed up but it would probably still lack good visual material to go with it. And if there are no significant visual materials, why did you do the presentation in the first place?

What to do? If it is indeed a good presentation, deserving of more than a one-shot appearance, give some thought to making a good picture/narration script for distribution to interested parties. The script can serve as an information piece, a *complete* permanent record, and promotion device.

The script would use actual photographs of the slides in the presentation combined with a typed narrative. The suggested method for reproduction is offset printing. The main problem comes from the fact that the narrative portion should be done from a line negative (all black or white with no shades of gray) for best reproduction, while the pictures should be done from a screened negative to give shades of gray. You can get a pamphlet from Kodak which gives more explicit information for you and for the printer. It is T-91-2-2, "Audiovisual Notes" and can be obtained by sending 20 cents to the Motion Picture and Education Markets Division, Eastman Kodak, Rochester, New York 14650.

At this point, it's worth pointing out that printing services and costs differ widely from place to place. You may have access to a print shop in your school or your district. Or, you may be forced to use commercial printers. Generally speaking, the more work the printer does, the higher the cost. If you have an adequate budget, you may want to take the slides and the typed script to the printer, describe what you need, pick up your job when it's ready and write a check for the costs. If you're like most of us, you often have more time and "hands" (especially if you have student help) than you do cash.

I took the middle route in cost and printing services. I didn't try making my own screened negatives for the printer (as in the Kodak pamphlet) but I did take him "camera-ready copy." This consisted of two pieces of artwork for every page of the script (fig. 1). Both pieces

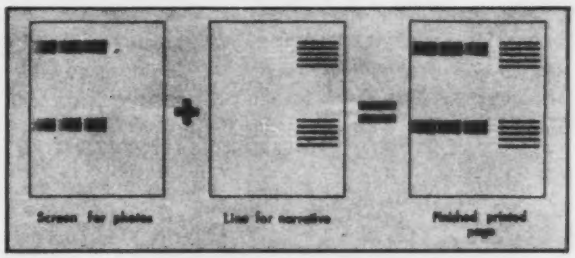

Figure 1

of artwork had register marks (fig. 2) so he could put them together with a minimum of fuss. A cardinal rule is "ALWAYS talk to the printer first"—explain exactly what you need and find out what he needs to do your job most efficiently and inexpensively. Any "handwork" he does costs both him and you.

The artwork for the screened negative part of the page (per his instructions) held the pictures done the *exact* size and in the *exact* place on the page where they were to appear. The second piece of artwork for the same page had the typed narrative in the exact place where it was to appear on the page. In my case the printer gave me (free) some forms with light blue lines on them which helped to get things lined up straight. I asked if graph paper would work as well. He said that some would and some would not. It depended on the actual color and density of the lines and the paper itself. Again, ask your printer.

The next step was designing the pages themselves. Since the presentation was three-screen, it was decided to lay it out "long ways" on the page (fig. 3). How you do it depends on how many images (or screens) you used and how much narrative you had with each picture or set of pictures. Some possible layouts are in figure 4.

The next step was preparing the typed copy and the actual pictures. I enlisted the typing teacher and his class to prepare the copy. I gave them fairly clean manuscript with exact width for setting margins, all

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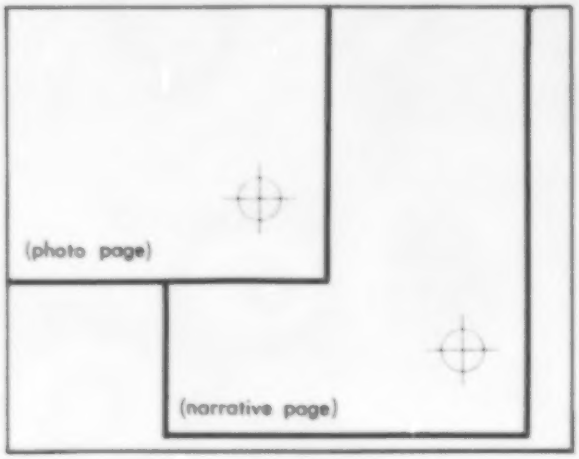


Figure 2

spelling and punctuation corrected. I also explained that since it was to be one continuous manuscript, it should be done on typewriters with the same size and style of type. (I did get an unexpected bonus, however, because the material was prepared on typewriters with interchangeable elements, words could be done in italics simply by changing the typing element while typing that word.) In the meantime, I used a photography class to work on the pictures (even though I could have done it faster myself). It gave them practical experience in an area not usually treated—making same size black and white negatives from a color slide. Some students used an inexpensive ($20-30) slide duplicator which attached directly to the 35mm single lens reflex camera body. Others used the camera with a bellows and a macro lens. The camera was mounted on our heaviest tripod, and we used a cable release. The procedure was more difficult with the bellows, but the experience gained would be useful for any macrophotography—not just slide copying. A slide copying device such as a Repronar or Illumintran could be used but none were available to us at that time. We used a fine grain, slow speed film to minimize grain and get a wide range of grays (recommended by the printer). The class ran a series of tests measuring the density of the slide with a light meter using the same light source each time. We bracketed exposures in a couple of test rolls and when we were satisfied with the results, we used the best settings, varying the setting with the density of the slide. All the slides were then copied at the same size (1:1 ratio) and contact sheets were made. We kept careful track of the slide number and position (right screen, left screen and so on) so that the information could be transferred to the margin of the contact sheet (and so we could reassemble the presentation correctly). We did *not* cut the contact sheets apart until the correctly typed script was ready and we were ready to assemble the artwork for the pages. And when we did cut the contact sheets, we used white gloves and special care—a little scratch or dirt can go a long way.

Assembly time! The typed script was proofread not once but three times—a standard commercial procedure. It was cut apart into sections by number (fig. 5). A section was carefully lined up and rubber cemented to the page. This page was taped (drafting tape, not masking tape) to the light board and the sheet with the pictures was carefully positioned over it and taped down. Registration marks were added to both sheets. The pictures were then carefully glued down in the space next to the copy. We continued this procedure, page after page, until all pages were done. The rule of thumb was that no copy block was carried over to the next page unless the block was unusually long. That way the reader did not have any copy without pictures next to it. The script was checked for number sequence and continuity as we pasted up each page. (Did you ever have to go back and repaste fourteen pages because one copy block was left out?) then the whole thing was checked again before page numbers were added using dry-transfer type to dress things up. *Every* student involved (including typists) was given credit either on the title page or on the last page of script. We had thought of adding pictures of each but there were too many students and too little space. Maybe next time.

The final check—and I feel this important to ever skip—was to run the presentation and check the script both visually and aurally to see that it was an exact match to the presentation. We actually killed two birds with one stone by inviting some of the people who had missed it the first time. The script was actually

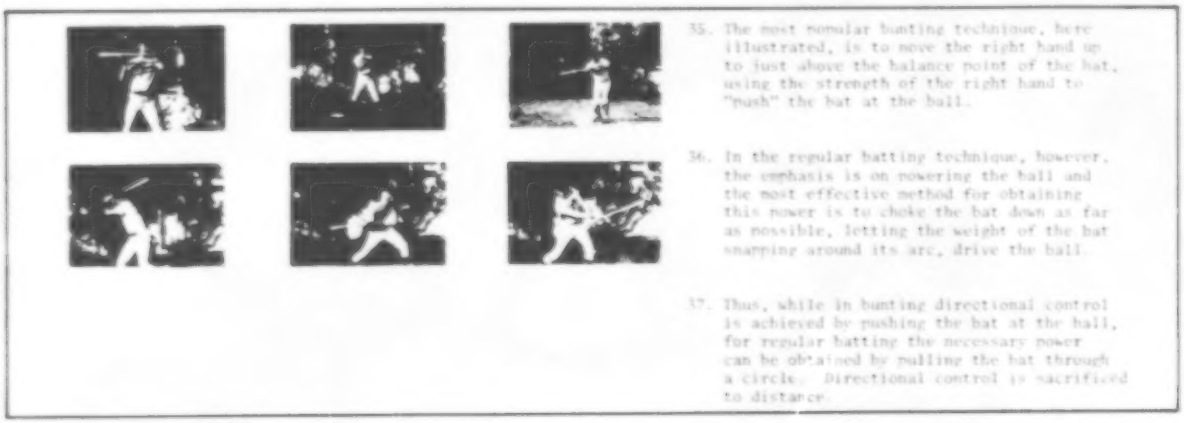

35. The most popular batting technique, here illustrated, is to move the right hand up to just above the balance point of the bat, using the strength of the right hand to "push" the bat at the ball.
36. In the regular batting technique, however, the emphasis is on powering the ball and the most effective method for obtaining this power is to choke the bat down as far as possible, letting the weight of the bat swinging around its arc, drive the ball.
37. Thus, while in bunting directional control is achieved by pushing the bat at the ball, for regular batting the necessary power can be obtained by pulling the bat through a circle. Directional control is sacrificed to distance.

Figure 3

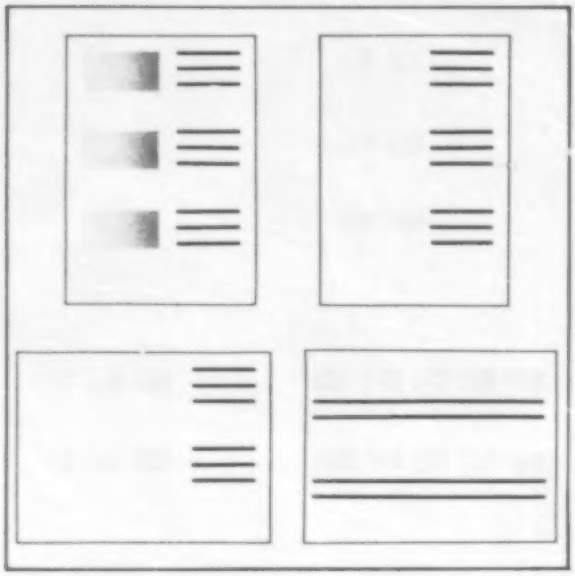


Figure 4

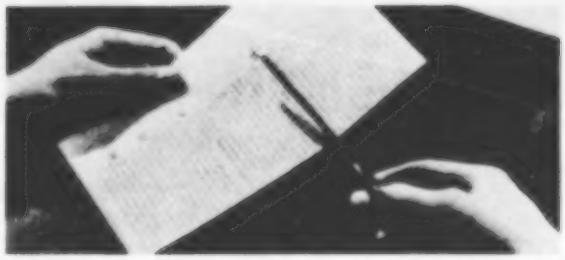


Figure 5

checked twice, first during rehearsal (which was necessary since we had taken all the slides out of the trays to copy them) and again during the actual presentation. The camera-ready copy then went to the printer (the district has its own print shop)where things went without hitch.

When the copies were returned every student (even the typists) got two copies (one for friends and one for home) and copies were sent to people in the school district and in the community. As a result, we received several invitations to show the presentations again and a writeup in the local paper, which actually used some of the script itself. In the long run, the results of our efforts were well worth the effort.

REHEARSING A SLIDE PRESENTATION WITHOUT A PROJECTOR

ARTHUR P. SHARKEY, JR., AND RICHARD H. EMENECKER

You're seated in a plane on the way to an important meeting — an ideal time to review your slide presentation. But you can't set up a projector and screen in mid air to practice script and slide coordination.

The cab's carrying you on that interminable trip between airport and hotel; another lost opportunity to review the show.

Of course you have script notes, but you'd still like to be sure of the sequence and the details to be covered by each slide. What you need is some way to carry a visual record of the slides. Fortunately, it can be done with a five-minute investment of your time and efficient use of a Polaroid camera and cassette tape recorder.

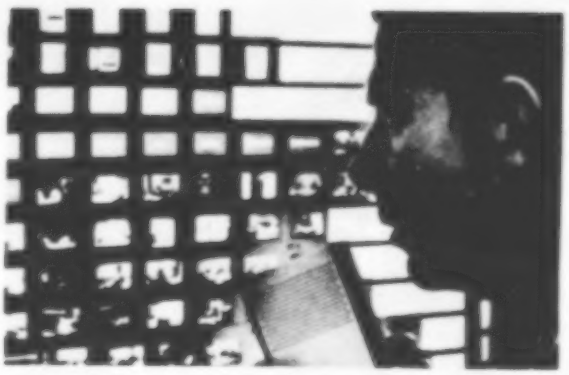
Difficult? On the contrary, the system's simple. Once your slides are arranged in the proper order on a light box or on a sorter, take a picture of the illuminated slides using a Polaroid camera loaded with either black and white or color film and equipped with a close up attachment. The camera will pick up a sufficient amount of backlight to make between 30 and 40 slides clearly recognizable. The next step is to tape a few remarks pertaining to each slide.

Now, when you're seated in that plane or cab, the combination of picture and tape gives you an instant mobile rehearsal system. Simply sit back, take the picture from your pocket, use the earphone monitor from the portable recorder, and review the presentation until you feel comfortable with the outline of your talk and the order of the slides.

With this type of rehearsal, you can stand before any group and talk easily without the "ah" traps:

"Ah, that one's out of order, however ..."

"Ah, I guess that refers to the next slide ..."



"Ah, I forgot to tell you ..."

There are other advantages of the picture record. First, it's available immediately. If the slides are accidentally spilled, they can be easily replaced.

Secondly, the picture is a permanent record of the slide sequence. Even if the slides are later sorted into different categories, they can be easily retrieved if the show is to be presented again. A 35 MM slide taken of the entire slide setup, in addition to the Polaroid technique, would provide the added advantage of projectability and clarity for future use.

Finally, another person, furnished with the taped summary and the photograph, can easily give the same presentation. This avoids the problem of having one individual locked into giving the same show over and over again.

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